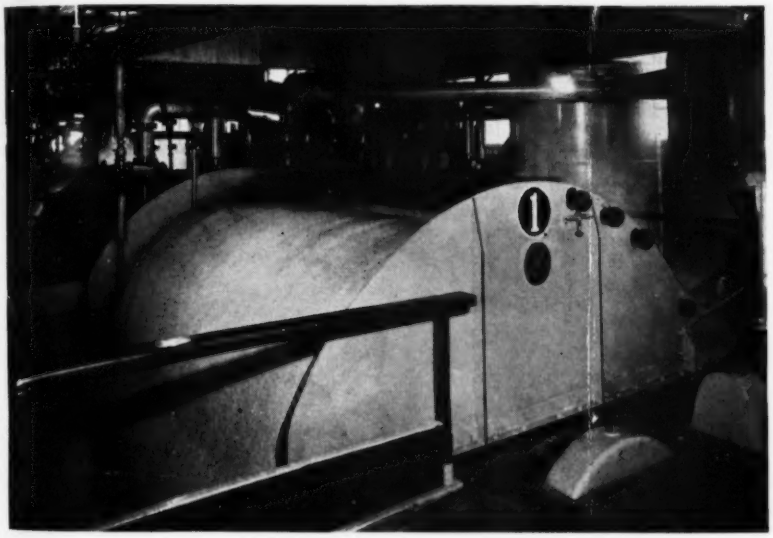
ENGINEERING LIBRARY

JUN 4 19

PAPER TRADE JOURNAL

VOL. 122 NO. 22 MAY 30, 1946



Pulp Washing Without Sewer Loss

The Swenson-Nyman Pulp Washer operates with a totally closed system...there is no sewer loss to waste chemicals and create a disposal problem. With legislative attention focused more and more on stream conservation, this equipment is especially welcome to mills faced with pollution problems.

The elimination of sewer loss is but one of many advantages inherent in the advanced design of the Swenson-Nyman Pulp Washer. An additional outstanding feature is the effective removal of chemicals with the addition of less water per pound of pulp washed, thus minimizing chemical makeup and dilution of the black liquor.

The high efficiency demonstrated by Swenson-Nyman Pulp Washers deserves the careful investigation of pulp mill management. Write today for Bulletin F-104.

SWENSON

SWENSON EVAPORATOR COMPANY

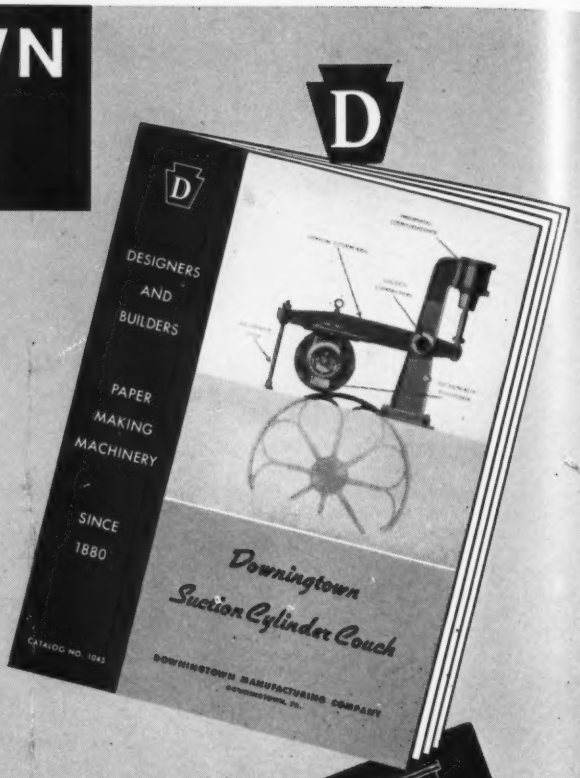
Division of Whiting Corporation
15687 Lathrop Avenue, Harvey, Ill.
Export Dept.: 136 Liberty Street
New York 6, N. Y.

PULP WASHERS • BLACK LIQUOR EVAPORATORS • LIME SLUDGE FILTERS • BLOW CONDENSERS

Wisconsin Mills Wait on Future of Coal Supply
Steel Reports on Institute's War Effort
Textbook Output Set at 13 Million
CPA To Remove Paper Controls
National Geographic Buys Champion-Internat'l
Texas Papers Plan Voluntary Rationing
United Wallpaper Buys in Appleton
Sanction 2 Million Envelope Mill

DOWNINGTOWN

Designers & Builders
Paper Making Machinery

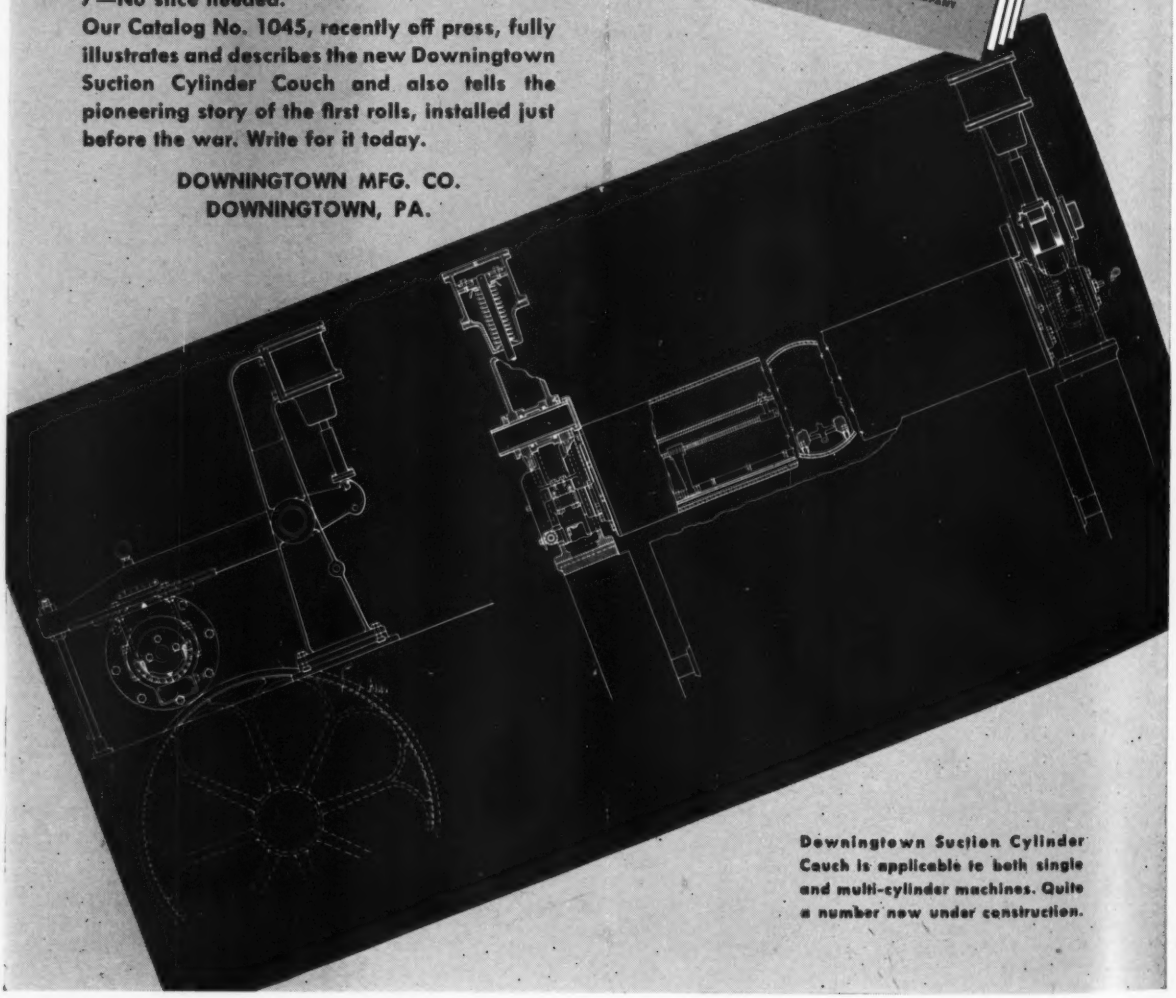


CYLINDER COUCHING BY AIR PRESSURE HAS MANY ADVANTAGES

1—The Downingtown Suction Cylinder Couch removes more water by vacuum than a rubber couch does by pressure.
2—Little or no pressure between Suction Cylinder Couch and the cylinder mould.
3—Eliminates all tendency to crush.
4—Assures maximum bulk.
5—Assures sheet tightly attached to felt.
6—Removes air entrained in felt and wet sheet.
7—No slice needed.

Our Catalog No. 1045, recently off press, fully illustrates and describes the new Downingtown Suction Cylinder Couch and also tells the pioneering story of the first rolls, installed just before the war. Write for it today.

DOWNINGTOWN MFG. CO.
DOWNINGTOWN, PA.



Downingtown Suction Cylinder Couch is applicable to both single and multi-cylinder machines. Quite a number now under construction.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.
Established 1872

Volume 122 Number 22

Published Every Thursday by Lockwood Trade Journal Co., Inc.

Executive and Editorial Offices:
15 W. 47th St., New York 19, New York

GEO. E. LOCKWOOD, *President & Treasurer*
ARTHUR E. GORDON, *Vice-President*
JOSEPH P. HORGAN, *Secretary*
W. L. COOK, *Editor*
HARRY I. JENSEN, *Assistant Editor*
R. G. MACDONALD, *"TAPPI" Editor*
F. B. GROSSE, *Make-Up Editor*

Eastern Representatives
BRUCE E. BROWN, *15 W. 47 St., New York 19, N. Y.*
EDWARD H. DOERING, *15 W. 47th St., New York 19, N. Y.*

Mid-Western Representatives
H. K. VINTON, *123 W. Madison St., Chicago 2, Ill.*
A. F. MACDONALD, JR., *Cleveland, Ohio.*

Pacific Coast Representatives
ROY M. MCDONALD & CO.,
San Francisco, 4, Cal., 584 Market St.
Los Angeles, 6, Cal., 1323 Venice Blvd.
Seattle, 1, Wash., 1411 Fourth Ave.

Representative for Denmark, Norway, Sweden and Finland
OXFORD TRADING AKTIEBOLAGET, *Bibliotekgatan 6-8, Stockholm, Sweden.*

Subscriptions: (Payable in advance) By the year $4.00; Single Copy 10 cents.
Postage Extra: To Canada $2.00; To Other Foreign Countries $3.50.
Member Audit Bureau of Circulations.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL *Feb. 19, 1926. All rights to the above titles reserved.*

PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.*

Copyright 1946 by the Lockwood Trade Journal Company, Inc. The contents of PAPER TRADE JOURNAL *including all articles, illustrations, etc., are covered by copyright and may not be reprinted except by permission.*

CONTENTS

MAY 30, 1946

CPA To Remove Paper Controls 7
Wisconsin Mills Await Future of Coal Supply 7
OPA Lifts Control on Specialty List 8
Steel Reports on Results of War Effort 9
Brown Emphasizes Need of Research 9
Quebec Leans to Natural Forest Growth 10
Ontario to Conserve to Get More Coated 12
Yale Forestry School to Hold Summer Term 18
Texas Papers Plan Voluntary Rations 20
Textbook Output is Set at 13 Million 24
Grocers to Study Packaged Produce 25
New England TAPPI Spring Meeting 29

Financial News 14
Market Review 45
Imports 50
Editorial 30
Production Report ... 31
Miscellaneous Markets 46
Market Quotations ... 46
Classified Advertising. 52

Technical Section *("TAPPI")*

Supercalendering of Paper Machine Coated Paper ... 33
Pacific TAPPI Meets at Gearhart, Ore. 36
Production of Bleachable Sulphate Pulps from Rapid-Growth Douglas Fir 37
New TAPPI Members 44

PAPER TRADE JOURNAL IS INDEXED IN INDUSTRIAL ARTS INDEX

INDEX TO ADVERTISERS ON PAGE 62

WHETHER YOUR PUZZLE IS PAPER CONVERTING, HEAT SEAL OR ADHESION—ARCC HAS A RESIN FOR IT

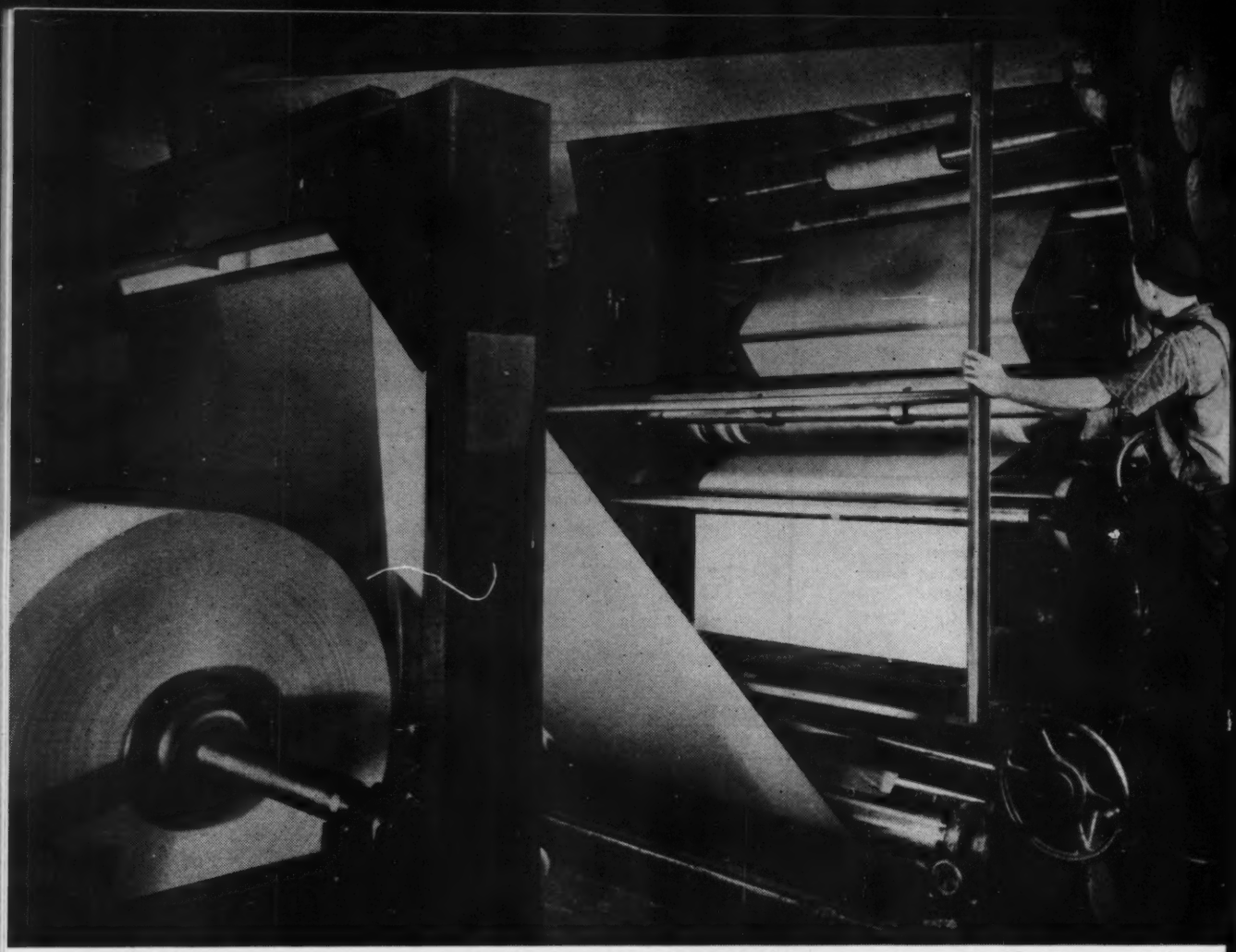
ARCC'S Scientifically Polymerized Emulsions combine the best features of aqueous and non-aqueous compounds; are stable, uniform, of controlled viscosity and low in cost.

Other formulations include solutions, dispersions, hot melts.

Arrangements for assistance from your nearest ARCC Laboratory will be made promptly upon receipt of your request. No obligation, of course.

American Resinous Chemicals Corp.

HOME OFFICES AND LABORATORIES: PEABODY, MASS.
NEWARK, N. J. MONROVIA, CALIF. CHICAGO, ILL.



Cuts the Cake ON ROLLER BEARINGS

SUN PAPER MILL LUBRICANT...

Eliminates Gumming and Caking on Bearings of Corrugator Machines

A company manufacturing corrugated containers called in a Sun Engineer to study the lubrication of their corrugators and cut-off machines.

Temperatures of approximately 340° F. in the rolls were heating up the bearings, causing a gumming and caking of lubricants.

A Sun paper mill lubricant, specially refined to meet that type of condition, was recommended and tried. After more than a year of service, operators reported that bearings had stayed clean. Maintenance costs had been lower, lubricant costs had been reduced, and the Sun lubricant was easier to apply.

Paper mills throughout the country rely on Sun lubricants to keep every type of paper machinery operating at high efficiency. For uninterrupted production, for low maintenance, call the Sun man near you today.

SUN OIL COMPANY • ***Philadelphia 3, Pa.***
Sponsors of the Sunoco News-Voice of the Air—Lowell Thomas

SUN
SUNOCO
INDUSTRIAL PRODUCTS

PAPER TRADE JOURNAL

Vol. 122, No. 22 May 30, 1946

Title Reg. U. S. Pat. Off.

CPA to Remove Paper Controls

WASHINGTON, D. C.—Because of increased paper production in both the first and second quarters, controls over the paper industry will not be reinstated, John D. Small, Administrator of the Civilian Production Administration, said this week.

"I am confident," Mr. Small said, "that if this production rate is maintained the balance of the year, we can expect the supply and demand relationship to become normal."

Mr. Small made his statement in response to a request by James F. Newcomb, President of Printing Industry of America, Inc., that controls be reinstated in the paper industry "to assure equitable distribution."

"I feel that the paper industry has done a splendid job of reconversion," Mr. Small said. "Census figures for the first quarter show an overall production of 4,573,702 tons or an annual rate of 18,492,808 tons as compared to 1941 when paper production reached the then all-time high of 17,762,364 tons."

Mr. Newcomb's letter had asked that each user of paper receive "a percentage increase in paper consumption equal to the percentage of increase in paper production."

"This," he added, "would also require issuing orders to control the entire consumption of all paper users, since obviously we could not use the provisions of the Second War Powers Act to force mills to allocate paper to users without, at the same time, controlling the end use.

Reinstatement of controls, Mr. Small said, would involve a substantial increase in CPA personnel and heavy administrative expense.

Holyoke Mills Offer New Union Contract

HOLYOKE, Mass.— Details of a new proposal made by paper manufacturers at a conference with union representatives are being withheld from publication pending action at the next meeting of the two local unions.

Union Organizer Edward M. Moore reported that favorable progress was made at the conference, and it is generally assumed that it resulted in a proposal more acceptable to the workers than the last offer, which was rejected. The rejected offer included an hourly pay raise of 8½ cents, with four paid holidays a year.

Wisconsin Mills Now Wait On Future of Coal Supply

National Geographic Buys Champion-International

WASHINGTON, D. C.—The National Geographic Society has purchased from shareholders a majority of the stock of the Champion-International Company, paper manufacturers of Lawrence, Mass. Management and operating policies will continue as heretofore.

For 34 years the Champion-International Company has supplied all the coated paper for the National Geographic Magazine. The monthly edition of 1,500,000 copies, distributed to the Society's members throughout the United States, now requires about 40 percent of the company's output.

Professional Group Elects New Slate

CHICAGO—The Chicago Professional Paper Group last week elected officers for the 1946-1947 year. As provided in the by-laws, officers were elected by mail, will take office July 1, though the actual installation will probably wait until the first Fall meeting of the Association. Those whose election was announced were: President, F. D. Long, Container Corporation of America; Vice-president, A. K. Roach, William H. Welsh Company; secretary, W. Price, Applied Research Service, and treasurer, C. Swett, National Wax Company.

The present list of officers, headed by Harry Weston of the Fritz Publications, has a June meeting yet to take care of when plans are being made to have an outstanding authority discuss the entire labor relations program.

At the May 20 meeting the attendance of one hundred and fifty members and guests were highly pleased with the efforts of the guest speaker, Dr. C. J. Dean, manager of the Socony Vacuum Lubricating Department, Process Products Section. Dr. Dean gave an excellent discussion on the relation of petroleum products to the paper industry and provided a discussion period in which to transmit to a most interested audience some useful facts concerning the application of petroleum products to the manufacture and conversion of paper and paper board.

APPLETON, Wis. — For the second time this month, late Saturday developments in national strikes appeared to clear the way for full operations at Wisconsin paper and pulp mills. President Truman's announcement while addressing Congress, that the two striking railway unions had accepted the terms proposed by him, came too late for official comment from the various mills, but, assuming an early improvement in the coal situation, a gradual return to normal was indicated.

Earlier Saturday, a spokesman for the Appleton Coated Paper Company, employing 320 persons, said that the mill could continue operations for two or three days, but if the coal strike continued a shutdown might result.

A notice had been posted at the Fox River Paper Corporation, Appleton, that the plant would operate Monday and as many days as the coal supply allowed. The company employs 500.

The Appleton Machine Company did not expect to be affected unless the strike continued a week or more.

Some departments of Marathon Corporation at Menasha were to be closed May 29 and 30 because of the lack of materials now supplied from Rothschild, where the corporation ceased operations because of the strike. The converting sections and paper mill were not affected.

The Neenah Foundry Company, Neenah, employing 173, closed Friday evening, for lack of raw materials.

An official of the Interlake mill, Appleton, of Consolidated Water Power and Paper Company, said the mill had a four-day supply of chlorine and that the mill probably would be forced to close when the supply was exhausted. At Wisconsin Rapids, Consolidated announced that it could operate only through Sunday, after which all available storage space would be filled.

Gilbert Paper Company, Menasha, closed the previous weekend because of the coal shortage, and expected to remain closed until coal shipments, already en route, have been received.

Badger Paper Mills, Inc., which was preparing to close before the truce was announced in the coal strike two weeks ago, received a shipment of strip mine coal, permitting resumption of fulltime operations.

OPA Lifts Control On Specialty List

WASHINGTON — Exemption or suspension from price control of a number of miscellaneous paper and other items, such as tags, pin tickets and marking machine tickets, friction tape, and fruit and vegetable wraps, has been effected by the Office of Price Administration. The items covered by action effective May 27, 1946 are for the most part sold to industrial users and not directly to regular consumers. The action is taken in accordance with the usual criteria for decontrolling commodities. The materials from which they are manufactured will continue to be under price control, OPA said.

Included in the list that is exempted from price control are the following: Decorative colored crepe paper, doilies (paper), draperies (paper), flock coated paper (rayon sisal and cotton flock), gummed stencil paper, luminous paper tape, paperboard bottle cap liners, pillow cases (paper), printed or embossed tray mats and shelf paper, ties for vegetables, woven paper fabrics.

Under indefinite suspension from price control are the following: Cigar boxes made principally of paperboard, to hold 25 cigars or more, cork tipping for cigarettes, disc milk bottle caps, fruit and vegetable wraps, oiled and plain, and shredded oil paper used in packing fruit. gummed flat papers, tags, pin tickets and marking machine tickets, tubes, cores, and cylindrical paperboard casings, except when impregnated and specially designed for use in electrical equipment—cones—ribbon blocks - fabric reels - bobbins —roving cans—spindles—spools and pins.

Package Machinery Union Endorses Leo Messier

SPRINGFIELD, Mass.— The United Electrical, Radio and Machine Workers Union, Local 220, at Package Machinery company, held a special meeting recently and unanimously endorsed the candidacy of Roger L. Putnam for the Democratic nomination for lieutenant governor, it has been announced by Leo Messier, union president.

This is the first time that the Package Machinery union has ever endorsed former Mayor Putnam in any of his political campaigns. He is a former president of the company and at present is chairman of its board of directors.

Everest Heads Food Drive

WAUSAU, Wis.—D. C. Everest, president and general manager of Marathon Corporation and a member of the state sponsoring committee of the nationwide emergency food collection drive, has been named as chairman of the drive in this city.

CPA Approves 2 Million Mill For American Envelope

DAYTON, Ohio—The American Envelope company proposal to erect a $2,192,052 paper mill near West Carrollton was approved last week by the Civilian Production Administration. This project was the largest approved by the CPA for the Dayton metropolitan area since the government agency was given control of all civilian building.

The new paper mill is part of the firm's postwar plans, Carlton W. Smith, president-treasurer of the company, said. The plant will be located between Alexandersville and the Alexandersville-Bellbrook roads, near the company's present plant.

The new mill will manufacture envelope paper for the company's other plants. About 125 men will be employed. Excavation has been completed and work on the foundation started. It will be a one story structure of 165,000 square feet.

Eagle Lodge Rejects Offer Of 8½-Cent Wage Hike

HOLYOKE, Mass.—Members of Holyoke's two locals of the Papermakers, AFL, have rejected a counter-proposal of the city's paper manufacturers. Eagle lodge of papermakers, meeting this week, voted to reject the company's proposals of an 8½-cent wage increase, and one additional holiday with pay. Similar action was taken by the Finishers union Friday night.

The unions are asking a wage increase of 12½ cents an hour and three additional paid holidays, a dues checkoff and health insurance. The managements have refused the checkoff and insurance proposals.

Union negotiators have applied for an early meeting with Harold T. Marin, labor adviser for the manufacturers, to formally advise him of the union's decision. They also said they are planning to schedule an early strike vote.

United Wallpaper Buys Site For Appleton Plant

APPLETON, Wis.—United Wallpaper, Inc., Chicago, has purchased 43½ acres immediately east of the Appleton city limits, as the site for a new wall paper manufacturing plant, it was announced May 24 by William H. Yates, president. The property has a frontage of about a quarter of a mile on the Fox river and is bordered by tracks of the Chicago and North Western Railway.

Stockholders recently authorized construction of a wall paper plant in Appleton, to be operated by Kimberly-Clark Corporation. An investment of about $500,000 will be involved. Mr. Yates, who was in Neenah to confer with officers of Kimberly-Clark, said that building operations will depend on availability of materials.

Wisconsin Valley to Let Dam Contracts

WAUSAU, Wis.—The Wisconsin Valley Improvement Company, at its recent annual meeting here, decided to take over the project of building the George Mead reservoir, west of Dancy, the third link in the series of power developments on the Wisconsin river as outlined and planned by the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis. It was decided to let contracts for the project contingent upon the vacating of county and town roads crossing the reservoir side, and construction and maintenance of which are considered too costly to make the reservoir project feasible.

An engineering committee, including William F. Thiele, Wisconsin Rapids; R. G. Walter, Madison; E. P. Gleason, Port Edwards; A. G. Carson, Green Bay, and M. W. Kyler, Improvement company manager, was appointed and empowered to go forward with the project, subject to the conditions mentioned above. A finance committee also was created, including G. W. Mead, Wisconsin Rapids; C. E. Kohlhepp, Milwaukee, and D. C. Everest, L. W. Hackbart and Mr. Kyler, Wausau.

All officers of the company were reelected: George W. Mead, Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., president; D. C. Everest, president and general manager of Marathon Corporation, Rothschild, and S. B. Bugge, Tomahawk Kraft Paper Company, Tomahawk, vice president; M. W. Kyler, vice president and general manager of the Improvement company, and L. W. Hackbart, secretary-treasurer.

Norman S. Stone, vice-president and general manager of the Mosinee Paper Mills Company, Mosinee, Wis., was elected to the board of directors to succeed H. J. Behnke, formerly of Neenah, who resigned from the board last August.

Directors reelected were Messrs. Mead, Everest, Bugge, Kohlhepp, Walter and Folke Becker, Rhinelander Paper Company, Rhinelander, Wis.; John E. Alexander, Nekoosa-Edwards Paper Company, Port Edwards, Wis., and W. E. Brooks, Wausau.

Paramount Paper in New Site

PHILADELPHIA, Pa.—Paramount Paper Products Company, Inc. has moved its offices and plant to Hamilton Street at Nineteenth. The new exchange is Rittenhouse 1854. Paramount was formerly located at 1601 Glenwood Avenue.

Club Elects Davidson

HOLYOKE, Mass.—Charles Davidson, Jr., vice-president of Whiting & Co., has been elected president of Holyoke's Reciprocity Club.

Steele Reports on Results of The Institute's War Effort

APPLETON, Wis.—The Institute of Paper Chemistry, Appleton, has grown on the concept that research is a dignified enterprise, which cannot be regimented, and depends on the creative enterprise of men who function as free-thinking individuals, Westbrook Steele, executive director, said in his report at the tenth annual conference here May 16 and 17.

The Institute has as its primary function scientific and technical training of men at the graduate level for the pulp and paper industry, and has played a vital role in the war effort—one which even yet may not be revealed in its entirety.

Mr. Steele told the approximately 300 paper and pulp executives that the Institute's board of trustees, at its February 23 meeting, approved a proposal by the United States Army Quartermaster Corps that the graduate course be made available to a small group of carefully selected West Point graduates. They will have to meet Institute requirements and comply with its regulations, but will not be eligible for an academic degree.

Referring to the Institute's contribution to the war effort, Mr. Steele said: "The 'restricted' work designed to support the plans and activities of our permanent military establishment is maintained at the same pace. These activities are conducted on the same basis as during the war, mainly without fee. They were undertaken and are being carried forward in a spirit of service to the national welfare, not for the purpose of providing budgetary income."

He reported the addition of a plant, in reality a small-scale paper mill. At the October meeting of the membership it was decided to provide this semi-plant, and the trustees held regional meetings of the members who were asked to provide a fund for facilities which would equal about an additional two-year dues.

"The response has been good," Mr. Steele said. "Some members still have the matter under advisement. The over-all undertaking is large. An important investment is required. Universal support from the membership is necessary. Allied industry too must cooperate if the desired result is to be achieved."

The Institute has two buildings new to the executives of the industry since they made their last visit. One, built in the summer of 1944, is the paper house, designed, developed and produced as a project for the Office of Production Research and Development, which wanted a temporary house to meet war emergencies. OPRD appropriated $25,000. The structure is a treated waste paper building, which can be erected by one man in 55 minutes. It can house four persons. This experimental building has stood for 22 months in all types of Wisconsin weather. Cost, including research, design and laboratory production, was less than $7,800.

The second new building is the permanent container laboratory, devoted to testing of containers and their components. A facility required in the prosecution of the paperboard program, the building was finished and occupied last March.

"We who are actively charged with the operation of the Institute have a deep sense of pride in it," Mr. Steele asserted. "We all feel a deep sense of loyalty and obligation to the industry which has made this experiment possible and which, by its faith and support, has translated it into reality.

"Our industry is a large industry. Nationally, it is the sixth largest. As such, it needs and deserves the best available in trained manpower and an educational and research institution complete and modern. In its institution, the industry needs flexibility as to equipment and wide versatility of staff. The institution's equipment should surpass any existing elsewhere in the world. The institution should be staffed by outstandingly able men whose fields of activity, knowledge and experience embrace the sciences and techniques involved in the raw materials, processes and uses of our product. Our industry's production is high, our dollar volume, large; our profit per unit, relatively small. We can afford only one such institution. Division of interest and dispersion of support weaken the facility, make full attainment impossible. Duplication of effort is costly. Close cooperation will bring ideal realization at relatively reasonable cost."

He said that the Institute has proved that an industry can cooperate for the over-all good.

Badger Mills Staff Holds Safety Dinner-Dance

MARINETTE, Wis.—The first postwar safety dinner-dance of the Badger Paper Mills, Inc., was held May 18, with 360 employes and guests present. E. A. Meyer, president and general manager, welcomed employes who have returned from military service and discussed conditions affecting the industry. H. A. Heathcote, engineer of the American Automobile Insurance Company of St. Louis, presented Orvill Skowlund an award for 10 years of safe driving of a company tractor-trailer unit to the Fox River Valley, making daily trips. W. F. Adrian was toastmaster at the dinner.

Brown Emphasizes Need of Research

APPLETON, Wis.—Growth of interest in research and particularly in the Institute of Paper Chemistry by executives of member companies and their technical associations was stressed by D. K. Brown, president of the Neenah Paper Company, Neenah, Wis., who opened the recent executives conference at the Institute. Mr. Brown referred to the tendency toward governmental subsidies and stressed the greater contributions made by the Institute, which is supported entirely by funds from within the industry. He said that industry is realizing that industrial research and development provide dividend insurance for stockholders and job insurance for employes.

Virtually all major paper trade associations were represented, the speakers' table providing an illustration. Present at this were President Nathan M. Pusey of Lawrence College; W. Irving Osborne, Jr., Cornell Wood Products Company, president of the National Paper Board Association; D. C. Everest, president of Marathon Corporation and past president of the American Paper and Pulp Association; Stuard E. Kay, manufacture manager, International Paper Company; John L. Riegel, president of the Riegel Paper Company, and past president of APPA; D. K. Brown, president of Neenah Paper Company and immediate past president of APPA; Reuben H. Robertson, executive vice president of Champion Pulp and Paper Company and present president of APPA; Ernst Mahler, executive vice president of Kimberly-Clark Corporation, and president of the Institute's board of trustees; F. J. Sensenbrenner, retired president of Kimberly-Clark Corporation and past president of APPA; Westbrook Steele, Institute director, and John Strange, Institute secretary.

Others present were E. W. Tinker, executive secretary of APPA; his assistant, Captain W. D. Staples; Morris Dobrow, executive manager of the Writing Paper Association; R. E. Canfield, executive vice president of the Groundwood Association; and five of the thirteen living medalists of the Technical Association of the Pulp and Paper Industry—Ernst Mahler, C. J. West, D. C. Everest, Otto Kress and R. B. Wolf.

Riverside Grants 5-Cent Raise

APPLETON, Wis. — Riverside Paper Corporation has renewed its labor contract with District 50, United Mine Workers of America, and granted a five-cent increase per hour for all hourly wage employes. The wage increase was retroactive to April 16. Adjustments were made in rates in various job specifications, and an increase of one-cent per hour was granted in round the clock shift differentials.

Quebec Opinion Leans to National Forest Growth

MONTREAL — Artificial reforestation is not needed to keep forest areas in continual production, was stated in emphatic terms by W. A. E. Pepler, manager of the Quebec Forest Industries Association, in an address before the Kiwanis Club in Montreal. He characterized artificial reforestation as wasteful and delusive, saying that practical experience, as opposed to theoretical practice, had shown that the most successful method of keeping the forest in continuous production, and the method most in conformity with natural law, was the scientific cutting of trees as they mature. Where this was done the forest reproduced itself after logging operations.

He did, however, advocate artificial planting to bring back into production abandoned farms from which every vestige of forest growth had been removed and on areas where a similar condition had been brought about by successive forest fires. In Quebec province particularly, he said, far too much land that was useless for agriculture had been removed from forest holdings in the past to be used for settlers and colonization. The result was that so-called "settlers" cut and sold all the trees for lumber or pulpwood and then moved on to clear other forest land for similar purposes.

To show the extent of this destruction of forests, he said that in the 12 years from 1930 to 1941, inclusive, 3,700,000 acres of land in the province had been granted to settlers and colonists and in the same period no less than 2,500,000 acres, or 70 percent had been abandoned. In spite of the fact that this large area had been transferred from forest use to agricultural use in those twelve years, the area actually under cultivation at the end of the period was less than at the beginning.

The greatest fault, he said, had been that man had too long believed that all land could be profitably farmed for agricultural crops, and there had been carelessness in establishing settlers on land, even after the unsuitability of the soil had been scientifically known. This had taken thousands of acres of potentially valuable soil for forests out of production for perhaps a century.

Canada's forest resources, he continued, were surpassed only by those of Russia and Brazil, and used properly they could supply Canada's pulp and paper and wood-working industries with all the raw material required, provided fire was not allowed to lay waste millions of acres and insects and disease were not permitted to kill millions of potential cords of wood.

Another point important to conservation, he said, and one not yet properly appreciated by provincial governments, was the granting of long-term leases for cutting rights in the forests. Annual leases did not encourage long-term management of forest areas, as forest management plans of forest industries called for large investments, not only in dams, roads, and other facilities, but in the care of young growing trees. With long-term leases there could be assured continuity of practice, with resulting benefits to the operators.

In line with the ideas expressed by Mr. Pepler, the federal Government is this year launching an intensified program for the progressive classification of land throughout the Dominion in accordance with its suitability for forest, agriculture and mining purposes. This season it is sending out no fewer than 76 geological and topographical parties for field work in various parts of the country, an increase of 25 parties over those similarly engaged last year. Of these, six of the geological parties will work in Quebec, six in the Northwest Territories, three in the Yukon, eight in Alberta, three in Saskatchewan, three in Manitoga, two in Ontario, one in New Brunswick and two in Nova Scotia. Of the 36 parties engaged in topographical surveys, 12 will work in New Brunswick, 11 in Nova Scotia, two in Quebec, three in Ontario, one in Saskatchewan, four in Alberta, and three in the Northwest Territories. In addition the National Museum will have four parties out engaged in folklore and ethnological surveys, paying particular attention to the St. Lawrence Valley, and to a bird and mammal survey in the Lake St. John area of Quebec.

The reason why so many topographical parties are being sent to the Maritime Provinces is that experience during the war has shown that the most potentially valuable resources of the Maritimes are not those of fishing and agriculture, valuable as these are, but those being developed by forest industries. Therefore, particular attention will be devoted to mapping in New Brunswick and Nova Scotia which will show the relative merits of the various areas for development for forest use on the one hand and agricultural use on the other.

Hurlburt Boosts Pay Scale Seven Cents an Hour

LEE, Mass. — Hurlburt Paper company has extended to its employes, effective May 13, a general wage increase of seven cents an hour. In addition to this general advance, the company has also established shift differentials for all its tour workers of four cents an hour for the second shift and six cents an hour for the third.

B. C. Pulp and Paper Builds New Bins

VANCOUVER, B. C.—Work is now under way in the first step in the remodernization program at the Woodfibre plant of the British Columbia Pulp and Paper Co. Ltd. Three chip bins are being erected by the company at a cost of $80,000. The full program of the company includes the installation of a hydraulic barking plant and a new power plant, but these projects have been delayed through postponement of delivery schedules.

Lawrence Killam, president of the company has said that it will be several months before installation of the hydraulic barker will be possible.

The chip bins now being erected are cylindrical concrete structures for storing the chipped wood before it is fed to the pulp making plant.

According to Mr. Killam, the work at Woodfibre is designed primarily to bring about a more stable and economical operation than has been possible in the past. When completed, the new installations will permit the plant to operate more efficiently, but will not greatly increase the productive capacity of the pulp mill.

Dryden to Offer New Stock And Retire Mortgage

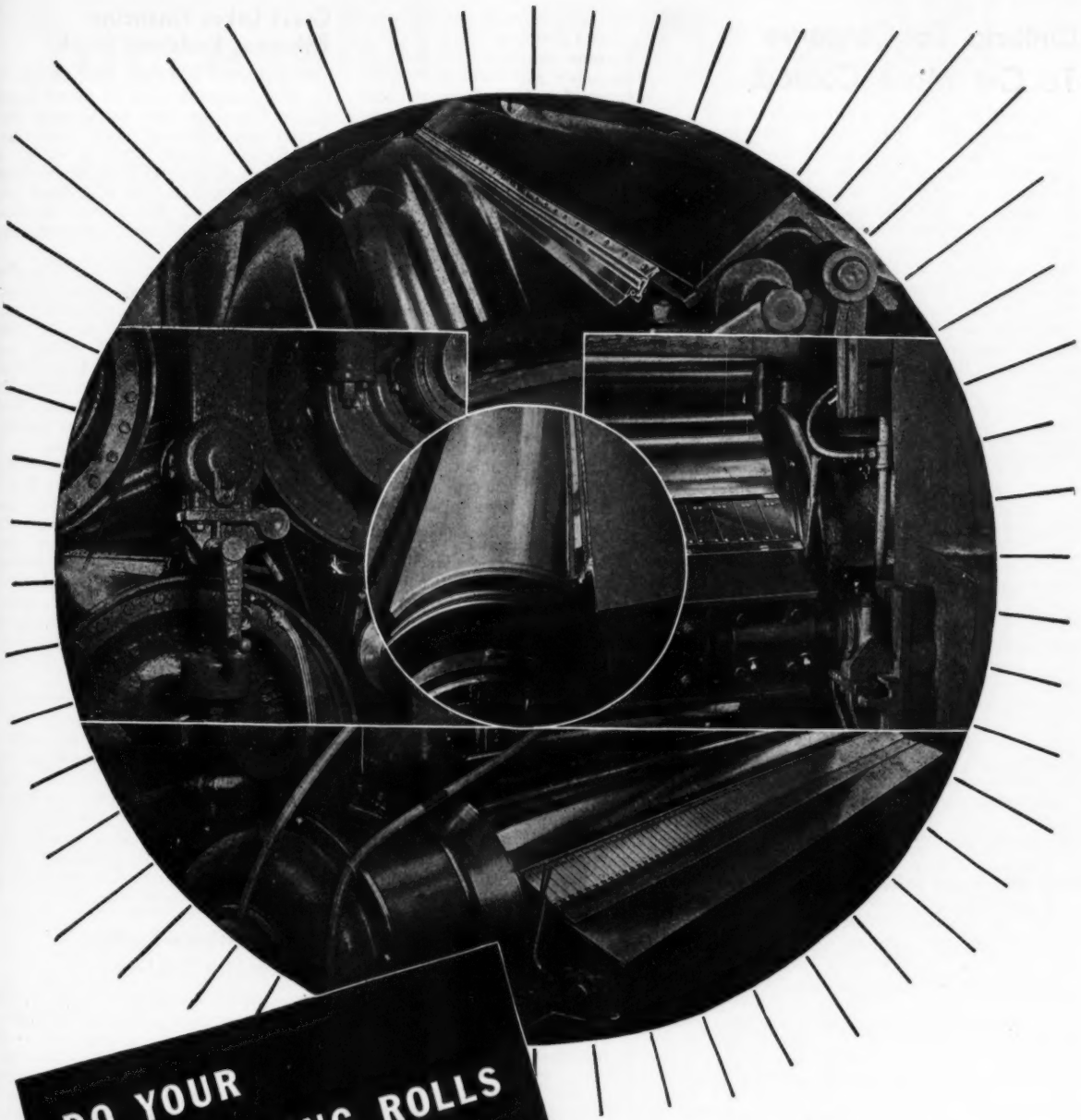
TORONTO — Dryden Paper Company shareholders last week gave unanimous approval to a by-law authorizing the creation and issuance of $3,000,000 principal amount of four percent first mortgage bonds. F. A. Sabbaton, president, stated that an offering of $1,500,000 of the new bonds would be made early in June. Proceeds will be used in part to pay off $787,000 outstanding six percent first mortgage bonds, which will be redeemed August 1. The balance will be applied to outstanding bank loans and will reduce them to a normal level consistent with ordinary fluctuations dependent upon the wood inventory position. The unissued portion of the newly authorized bonds may be offered in the future if a further modernization of the company's paper-making facilities is undertaken.

Hanke Joins Lockport Felt As Newfane Superintendent

NEWFANE, N. Y. — Lincoln Hanke, former felt division superintendent of the Kieckhefer Container Company, at Delair, N. J. has been made superintendent of the Lockport Felt Company mill. He plans to move his family to Newfane soon.

Mr. Hanke's entire career has been spent in the manufacture of papermaker's felts, starting with the Orr Felt and Blanket Company prior to his joining Kieckhefer some fifteen yars ago.

Howard F. Brown, former superintendent of the Lockport mill has been promoted to be assistant to the mill manager, Harold J. Smith.



DO YOUR PAPERMAKING ROLLS SHINE LIKE THESE?

All these rolls have one thing in common — VICKERY DOCTORS.

They're uniformly smooth and shining, whether they be press rolls, dryers, calender or super-calender rolls because each has a Vickery Doctor that's engineered for the job.

How about yours?

BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

Ontario To Conserve To Get More Coated

TORONTO — Taking a tip from the recommendations of Chief Justice Sloan of British Columbia in his report following five months of investigation into woods operations in that province, the province of Ontario has launched a conservation program calculated to put an end to indiscriminate "high grading" of this part of Canada's forest wealth. Hon. W. G. Thompson, Ontario Minister of Lands and Forests, disclosed to the Legislature recently that management units have been created in the province to ensure that timber limits are allotted to woods operators on a scale that will permit annual cropping of the area, without depleting its resources.

Signed agreements have been entered into between the department and the twin industries of lumbering and pulp and paper, setting aside 35 million acres of timber to be cut on the sustained yield principle. Limits have been allocated in proportion to the capacity of the mill for which timber is destined. Management plans have been prepared to show the operator in each case how his cut must be regulated and the productive capacity that must be installed to utilize the annual cut. Other agreements, based on the same principles, are being drawn up and it is expected that, eventually, virtually all Crown timber lands in the province will be made available for timber operations only on the sustained yield basis.

The radical step towards timber control was taken, Mr. Thompson said, "to develop a balanced relationship between the available timber supply and the industries that depend on that supply for their raw material."

The continued shortage of fine papers in Canada is curtailing magazine expansion plans of many Canadian periodicals, according to Floyd S. Chalmers, executive vice-president of the Maclean-Hunter Publishing Company, Limited, Toronto. Speaking to the annual meeting of the Periodical Press Association, Mr. Chalmers claimed that Canadian magazine publishers will not be able to increase their circulations to match a growing demand until Canadian paper companies have stepped up production of magazine paper beyond any programs announced to date. Mr. Chalmers said there were three reasons why a considerable increase in fine paper production will be necessary to ease the present shortage condition.

1. Most publications have returned to pre-war paper weights and finishes. This means they require more tons of coated paper to produce the same "yardage". Consequently, increased production to date has not taken care of either higher circulations or heavier schedules of advertising.

2. The real extent of the paper shortage has been concealed to some extent by the shortage of printing equipment and printing labor. As new presses become available, the demand for coated paper will increase rapidly.

3. Demand for Canadian publications has been growing and will continue to grow. In addition to greater readership in the domestic market, Canadian periodicals are meeting a growing international demand.

Mr. Chalmers pointed out that periodical circulations in Canada are approximately one copy for each two inhabitants, as compared to a rate about double that in the United States. Slightly more than half of all periodicals circulated in Canada come from outside the country. He predicted, however, that within a year or two Canadian periodical circulations will exceed that of imported periodicals and, from then on, gain a wide margin.

With all these influences at work, creating a growing demand for Canadian paper, he said, current plans for increased paper production were still short of expected need.

"There is not in Canada at the present time," Mr. Chalmers declared, "nor is there definitely in sight, capacity for the production of fine paper up to the probable longer term requirements of the magazines, the business papers and those of the agricultural papers that are printed on fine paper."

As reported some months ago, Provincial Paper Mills increased coating capacity at Georgetown, Ont., by about 3,000 tons a year. Full advantage of this increased capacity, however, could not yet be realized, Mr. Chalmers said, until more adequate supplies of suitable stock for coating were received, but it had helped to ease the 1946 shortage by making available a supply of coated ground-wood paper.

The same mill is installing facilities at Port Arthur, Ont., to make machine-coated stock. The effect of the development, Mr. Chalmers said, will be to improve the grade of paper produced at the Port Arthur mill, rather than to increase the yardage. Capacity of the new machine is expected to be about 25,000 tons a year, of which 15,000 tons will be coated paper and the balance other grades. As demand grows, he suggested, the 10,000 tons can be converted to coated stock.

Cooper Produces Manual On Resistant Alloys

Designed primarily for distribution to field representatives of the Cooper Alloy Foundry Company, a new manual of technical data on heat and corrosion resistant alloys is now available in limited number. This manual contains concise information on mechanical and physical properties; chemical analysis ranges; and corrosion resistance of stainless steels, nickel, monel, carbon and low alloy steels and other alloys. The manual, which contains no advertising, was compiled by N. S. Mott, Chief Chemist and Metallurgist of the Cooper Alloy Foundry Company, Hillside, N. J.

Great Lakes Financing Enhances Preferred Stock

TORONTO—Following publication of the reorganization plan of Great Lakes Paper Company, last week, both preferred and common stock sold off—the former losing $2.25 a share to $61.25, the latter $4.75 to $28. Greater drop in the common is attributed to a readjustment of the prices of these stocks in line with their prospects under the new plan.

As suggested last week, the plan wipes out preferred dividend arrears and raises the Class A preferred rate to $2.50 cumulative from Jan. 1, 1946, which is divided into $1.20 initial rate and $1.30 additional. Class B preferred are given the right equally with the "A", to a $1.20 preferred dividend. The "A" preferred will also participate equally with the common.

On this basis Great Lakes Paper "A" preferred should sell for $50 a share higher than the common, analysts argue. (Based on valuing the $2.50 rate at 5 percent.) Although earnings of $2.50 a share are estimated, common shareholders are unlikely to receive more than $1 a share, especially as there will be serial bonds to retire, it is felt. Further, there is no indication of when a common dividend may be declared.

At $63 a share, the "A" preferred would return 3.97 percent on a $2.50 dividend or 5.55 percent on a $3.50 dividend. But at $29 the common only returns $3.45 if a $1 dividend is paid. In view of this, switching from the common to the preferred seems justified. The plan is expected to be approved by shareholders at their meeting on June 13, especially as directors recommend it.

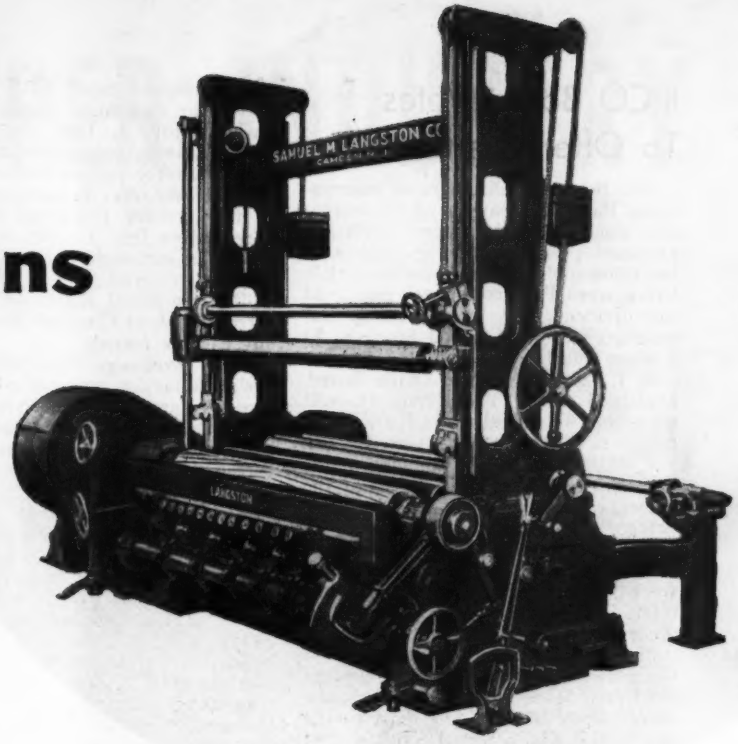
New Flintkote Product Is Non-Slip Coating

The Flintkote Company, New York, has added a new product to its line of industrial coatings, to be known by the trade name Flintred. It is described as a synthetic plastic anti-slip coating which is applied by trowel over steel, concrete, aluminum, galvanized iron, hard tile and wood floors. On clean steel it serves as a corrosion resistant protective coating in addition to its function of overcoming slipperiness.

Flintred will be available in red, green and slate blue, ready for application in trowel coats of approximately 1/16 to 1/8 inch thickness. The material is characterized as resistant to water, gasoline, oil, alcohol, ordinary fats and grease.

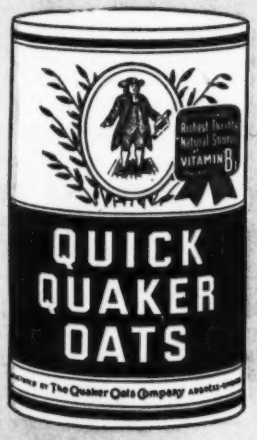
In industrial use, Flintred is recommended for periodical application to worn floor areas that become unsafe under foot when wet from water, oil or the like. The Flintkote Company has issued a data sheet giving recommended application methods to various surfaces around machinery, on steps, ramps and platforms, in garages and kitchens, locker and shower rooms, floors of process plants and over steel.

Successful Combinations



On the breakfast tables of America, "oatmeal-and-cream" has always been a popular team. The familiar Quaker Oats package that brings you this wholesome food is made with the help of a Langston "BA" Slitter and Roll Winder. Noted for the excellence of their products, The Quaker Oats Company, Chicago, find that Langston Slitters fully meet their exacting standards in the production of the package.

Wherever paper is processed; in the Mill, the Finishing Room, or the Converting Plant—Langston Slitters and Roll Winders assure dependable, trouble-free service.



SAMUEL M. LANGSTON COMPANY
CAMDEN, N. J.

Langston

SLITTERS AND ROLL WINDERS

IPCO Board Votes To Offer Shares

The Board of Directors of International Paper Company at their meeting this week voted to proceed with the proposed exchange offer to holders of the Company's Cumulative Convertible five percent Preferred Stock and fixed the dividend rate on the newly authorized senior Preferred Stock at $4 a share yearly.

R. J. Cullen, chairman of the Board, explained that "The Company will offer the 400,000 shares of the Company's new senior $4 Preferred Stock and 100,000 shares of Common Stock in exchange for 400,000 shares of the present Cumulative Convertible five percent Preferred Stock, subject to certain conditions to which I refer below. It will take at least another week before we can make the exchange offer. Details will be mailed to present preferred stockholders at that time.

"In exchange for each share of Cumulative Convertible five percent Preferred Stock accepted for exchange there will be issued:—one share of the new senior $4 Preferred Stock and ¼ share of Common Stock. Only 400,000 shares of Cumulative Convertible five percent Preferred Stock can be accepted for exchange. The exchange offer will terminate at the close of business July 1, 1946, unless the Company elects to continue it. Unless at that time more than 100,000 shares of five percent Preferred Stock have been tendered for exchange, the offer will automatically be withdrawn and no exchanges will be made. If more than 400,000 shares of five percent Preferred Stock have been tendered for exchange, an allocation of the shares to be accepted will be made substantially pro rata. If less than 400,000 shares and more than 100,000 shares of Cumulative Convertible five percent Preferred Stock have been tendered for exchange by the close of business July 1, 1946, the Company may, by giving appropriate notice, continue the offer subject to later termination. If the offer is continued, shares of five percent Preferred Stock tendered after July 1, 1946 will be accepted in exchange chronologically as they are received.

"No fractional shares of new Preferred Stock or Common Stock will in any case be issued.

"This Exchange Offer will be made for voluntary acceptance of five percent Preferred Stockholders and will not supersede the existing right to convert each share of five percent Preferred Stock into 2½ shares of Common Stock. As a result, each holder of five percent Preferred Stock will have the choice of three options: (a) to tender his five percent Preferred Stock for exchange on the basis outlined above; or (b) to convert each share of his five percent Preferred Stock into 2½ shares of Common Stock; or (c) to continue to hold his five percent Preferred Stock with the continuing right to convert it into Common Stock, until redeemed. Of the five percent Preferred Stock now outstanding 200,000 shares (about twenty-five percent have been called for redemption July 5, 1946. The management of the Company has, announced a policy which contemplates ultimate retirement of the entire issue."

Abitibi Elects Class "B" Directors

TORONTO — Shareholders of Abitibi Power and Paper Co., Ltd., this week elected E. W. Bickle, G. H. Gundy, J. S. D. Tory and W. H. Smith as Class "B" directors. These directors will represent share holders of the company other than five percent preferred shareholders.

Brown Pays Interest On Mortgage Bonds

Brown Company, manufacturer of pulp, paper and allied products, will make, on June 1, the semi-annual payment of interest on its general mortgage five percent cumulative bonds for the six months ending May 31. Checks will be mailed on June 1 to registered owners at the close of business May 31. F. G. Coburn, president, reminded holders of Brown Company's old securities outstanding at the time of reorganization of the Company, on November 29, 1941, that these must be exchanged for new securities in the reorganized Company on or before April 5, 1948, after which they become void by court order. This applies to first mortgage five and one half percent gold bonds, or certificates of deposit or deposit receipts for such bonds; and old six percent cumulative preferred stock or certificates of deposit for such stock. Such securities in the United States should be forwarded to The National Bank of Commerce of Portland, Maine; in Canada, to The Royal Bank of Canada, Montreal.

AWP Calls Bonds For Redemption

HOLYOKE, Mass.—American Writing Paper corporation has called for redemption on July 1, $50,000 of its outstanding $1,055,550 of general mortgage six percent bonds due January 1, 1961.

Payment of interest and accrued interest will be made by the Chase National bank of New York. The corporation called for redemption of $500,000 in these bonds on January 1.

Option to convert any called bonds into shares of the corporation will cease at the close of business on July 1.

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending May 25, 1946

STOCKS

	High	Low	Last
A. P. W.	9	8½	8½
Armstrong Cork Co.	61¼	60	60⅛
Celotex Corp.	30⅞	28½	30⅛
Celotex Corp., pf.	21¼	20¾	20⅞
Certain-Teed Products Corp.	24¼	23¾	24
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	68½	67	68½
Champion Paper & Fibre Co., pf.	113½	112	113
Congoleum Nairn Co.	38¼	37	38
Container Corp. of America	52¼	51½	51½
Continental-Diamond Fibre Co.	15¼	14½	15⅛
Crown-Zellerbach Co.	37⅛	36	37⅛
Crown-Zellerbach Co., pf.	108⅞	108⅛	108⅛
Dixie Cup Co.	50½	48½	49
Dixie Cup Co.—A	61½	59¼	60½
Flintkote Co.	45¼	43¼	44⅜
Flintkote Co., pf.	113	113	113
Robert Gair	10⅜	10	10⅛
Robert Gair, pf.	20⅞	20⅝	20⅞
International Paper Co.	50	48¾	49
International Paper Co., pf.	124½	121	122
Johns-Manville Corp.	155¾	151	154
Johns-Manville Corp., pf.	142	142	142
Kimberly-Clark Corp.	69	67	69
Mac Andrews & Forbes	41¼	40¾	40¾
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	67¾	66	67
Mead Corp.	28¾	27½	27½
Mead Corp., pf. A—6%	105¾	105	105¾
Mead Corp., pf. B—5½%	106	105¾	106
National Container Corp.	36½	34⅛	34⅞
Paraffine Companies, Inc.	84	81	82
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	32¼	30⅛	30⅞
Rayonier, Inc., pf.	38⅜	38	38
Ruberoid Co.	62	58	62
Scott Paper Co.	55⅜	54¼	54¼
Scott Paper Co., pf.	....	....	....
Sutherland Paper Co.	51½	50⅛	50⅛
Union Bag & Paper Corp.	35½	34¼	35¼
United Paperboard Co.	13¾	12⅝	12⅝
U. S. Gypsum Co.	129¼	128½	129
U. S. Gypsum Co., pf.	203½	203½	203½
West Virginia Pulp & Paper Co.	48½	47	47
West Virginia Pulp & Paper Co., pf.	115	114¼	115

BONDS

Abitibi Pulp & Paper Co. 5s '53	109¼	109¼	109¼
Celotex Corp. 3¾s '55	....	....	....
Certain-Teed Products Corp. 5½s '53	..	....	....
Champion Paper & Fibre Co. 3s '65	....	....	....
International Paper Co. 5s '47	102¼	101¾	102
Mead Corp. 3½s '53	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending May 25, 1946

STOCKS

	High	Low	Last
Great Northern Paper Co.	41¾	41	41½
Hummel-Ross Fibre Corp.	20¼	19	19⅜
St. Regis Paper Co.	13⅞	12⅞	13⅞
St. Regis Paper Co., pf.	....	....	....
Taggart Corp.	11	10½	10½

BONDS

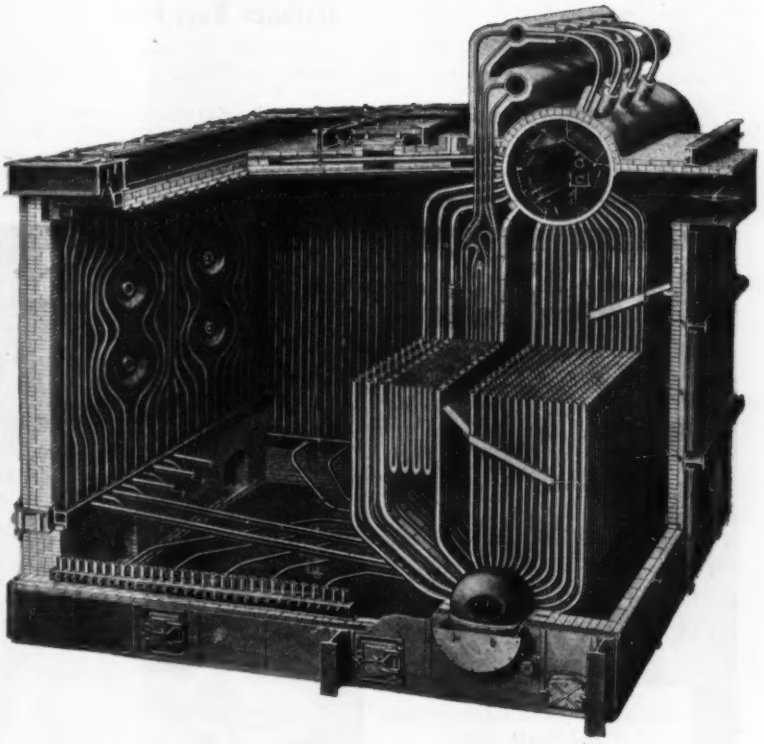
American Writing Paper Co. 6s '61	....	....	....

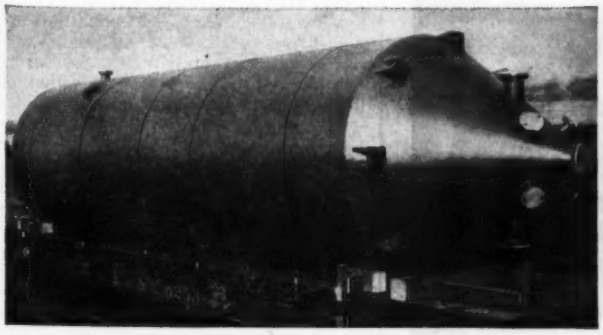
TO THE PAPER INDUSTRY

STEAM GENERATING UNITS

For all paper mill steam requirements from the largest to the smallest, the C-E Steam Generator, Type VU, has established a reputation for dependable and economical service. Up to the end of World War II, VU Units with an aggregate steam capacity of more than 3,000,000 lb per hr had been purchased by the pulp and paper industry. Since V-J Day, with wartime restrictions relaxed, another 1,500,000 lb of capacity has been ordered — a striking indication of the extent to which the paper industry has decided that this unit is the best answer to its steam generation problem.

The VU Unit is versatile. It may be fired with pulverized coal, oil, gas or any of these fuels in combination. It is adaptable to the installation of any type of stoker or may be equipped with a bark-burning furnace. The paper industry is employing VU Units with these various types of firing in capacities ranging from 20,000 lb of steam per hr up to 225,000 lb per hr, with steam pressures up to 875 psi and total steam temperatures to 825 F.





DIGESTERS and PRESSURE VESSELS

Many C-E built cylindrical digesters of the type illustrated here, as well as others of the spherical type, are in service in the paper mills of North America. The extensive facilities of C-E Shops are available for the fabrication of many other types of pressure vessels employed in the manufacture of pulp and paper. These are built to your specifications by highly skilled personnel with extensive and diversified experience in this type of work. Why not consult C-E now on your pressure vessel requirements?

A-970

COMBUSTION ENGINEERING

C-E

200 MADISON AVENUE • NEW YORK 16, N. Y.

C-E PRODUCTS FOR THE PAPER INDUSTRY INCLUDE STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; ALSO MANY TYPES OF PRESSURE VESSELS.

British Columbia Doubles Reforestation Program

VANCOUVER, B. C. — Seeding of young Douglas fir trees in British Columbia has been stepped up to permit the doubling of the reforestation program of the Provincial Forest Branch of the Department of Lands for 1948.

During the last few years the output of the Forest Branch's nurseries has been about 10,000,000 Douglas fir trees. Seeding this spring in the nurseries is for an output of 20,000,000 Douglas fir trees which will be ready for planting in 1948.

This year the department has planted about 6,500,000 trees in its reforestation program, all three-year-old Douglas fir trees planted on Vancouver Island. Some two-year-old trees were available for planting this year but a lack of labor made it impossible to use them in the government's program.

Next year the forest branch will have available for planting between 7,000,000 and 8,000,000 three-year-old trees. After next year two-year-old trees, which are considered better, will be used instead.

Starbuck Buys Plant

HOLYOKE, Mass.—Starbuck, Inc., a paper converting corporation formed with this city as its address, has purchased the Raytheon Corporation plant in Greenfield for $55,000, and is starting manufacture of paper drapes. The Holyoke address tag was acquired some time ago when the corporation was negotiating for space in the Holyoke Water Power company's old mill property on Dwight street. That deal fell through.

President is Herbert A. Starbuck, former Springfield Ordnance district major. Alfred Bottum of Vermont is treasurer, and William H. Cooney is secretary. The Greenfield plant, formerly owned by the T. Morey Printing company, was used by Raytheon for manufacture of fuses during the war.

Yale Forestry School To Hold Summer Term

NEW HAVEN, Conn.—After a lapse of four years caused by wartime conditions, the Yale School of Forestry will again hold a summer term from June 26 to September 10 in the Great Mountain Forest, Litchfield County, Conn. A total of 36 students, drawn from 21 American universities and five foreign countries—Denmark, Holland, India, Scotland, and South Africa—has already enrolled for the special eleven-week term. Five students from Yale are included among those who have registered.

Headquarters for the summer session will be the Yale Forestry Camp, comprising a complete and permanent group of buildings presented to the School in 1940 by Starling W. Childs, B.A. 1891, and Edward C. Childs, B.A. 1928 and M.F. 1932.

The curriculum includes courses in forest measurements and work in various types of surveying. The instruction is under the direction of Eugene V. Zumwalt, Assistant Professor of Forestry and Director of the summer term, and Forrest R. Hughes, Assistant Professor of Engineering Drawing.

Canadian Schools Train Veterans in Forestry

VANCOUVER, B. C.—Applications are now being accepted by Canadian Vocational Training from veterans desiring to take courses in the operation of heavy logging equipment. Several 12-week courses in this field are now being conducted in Vancouver. One course deals with the operation of multiple-wheeled trucks. Others give training in the handling of bulldozers and donkey engines.

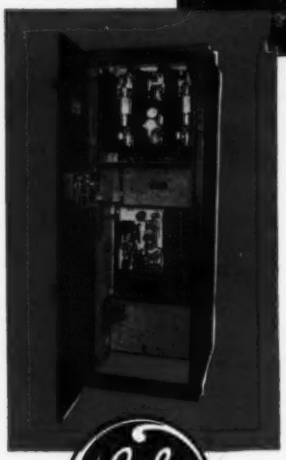
While those taking the course are not guaranteed jobs, Canadian Vocational training has had requests from a number of logging firms for men capable of handling this work and it is felt that for a period at least there will be no difficulty in satisfying those who graduate from the course.

The Power Saw School, which is operated at Nanaimo, has already produced men who are filling profitable jobs in the lumber industry. These training schools associated with forestry industries are operated by Canadian Vocational Training, with the support and assistance of the B. C. Truck Loggers' Association and the B. C. Loggers' Association.

WARREN PUMPS
Warren Stock Pump
Type 2-SOD-11 and 3-SOD-11
Warren Stock Pump
Type 5-SOD-15 . . . 12" suction nozzle
For all Paper Mill Services including
Liquor Pumps in Sulphite, Soda and Kraft Mills
Pulp Stocks up to 7% density
Water pumps for Mill Supply, Showers, White water, Wash-down, etc.
Boiler feed and all other power-plant requirements.
CENTRIFUGAL
RECIPROCATING
Warren Double Suction Pump
Single Stage
Warren Machine Chest Pump
Warren Digester Liquor Circulator
Type 10-LS-19
Warren Liquor Pump, Type "L"
Single-stage, Single-suction
WARREN STEAM PUMP CO., INC.
WARREN, MASSACHUSETTS

Selection of factory-assembled Limitamp control for this plant made it possible to install a single compact group, instead of a number of separate devices, in a small amount of floor space.

Here's FAST, "PACKAGED" Short-circuit Protection for Your High-voltage Motors... Limitamp Control



LIMITAMP CONTROL

OPERATES WITHIN A SPLIT CYCLE

● You can give your motors sure short-circuit protection by specifying G-E Limitamp control. Faster than any breaker, this "all-in-one-unit" control, with its EJ-2 fuses, clears fault currents in a half cycle.

When a short occurs, the fuses cut off the rise in current in less than a quarter cycle. And the short is cleared long before the current has time to harm the contactors or motor.

GIVE YOUR PAPER MILL THESE IMPORTANT ADVANTAGES

Completely co-ordinated control—Limitamp is "packaged" in a single unit which is easy to install and attractive in appearance.

Full protection—If voltage is low or power fails, the motor is taken off the line. And it will not restart on return of power. Accurately calibrated overload relays protect your motors from overheating due to sustained overloads, locked rotor, or single-phasing.

Years of service—Air-break contactors, good for millions of operations, meet the most severe requirements of high-voltage motor-control service. Contact-tip life is many times that of comparable oil-immersed tips.

Safety for operators—And because it is totally enclosed in an all-metal case, Limitamp control provides protection for all operating personnel.

GENERAL ELECTRIC

676-220-8900

Textbook Output Is Set At 13 Million

WASHINGTON, D. C.—There will be an estimated available new supply of 15 and a half million college textbooks for 1946, according to a survey made by the Civilian Production Administration. Since estimated requirements for the 1946 school year are 14.4 to 16.1 million textbooks for an anticipated student enrollment of 1,600,000 to 1,800,000, the CPA has decided that no assistance to obtain paper need be granted textbook publishers. Shipments for 1945, it was said reached a little more than ten million books.

New books to be printed in 1946 will be slightly less than 13 million. There will also be available one million textbooks remaining from the Army Specialized Training and the Navy's V-12 programs and in addition there may be a substantial surplus remaining from the United States Armed Forces Institute programs. Further deficits are expected to be met by withdrawal of one and a half million books from publishers' inventories.

Nearly eight million of the new books will become available before the opening of the school year in September, the survey indicated. Another five million will be manufactured by the end of December, 1946. This should meet the demand in physical units. However, choices as to particular textbooks, authors, or editions at the time they are desired may be limited.

CPA anticipates continued shortages of college textbooks and some delays in supplying educational institutions and their students with the textbooks which they would normally use. However, the survey shows that the situation will be much less critical than has been indicated by some preliminary appraisals of the college textbook supply and demand for the academic year 1946-47. In view of the critical shortage of all paper and current heavy demands on the capacity of book printers and binders, it is not believed that special assistance can be given to the making of textbooks without creating even more serious problems.

TOM GOULARD
and golfing pals, Charles Leissler (left) and Dale Johnson (right) at W-G-P golf tournament.

Boston Trade Tees Off June 10 For Busy Day at Newton Centre

BOSTON, Mass.—At the regular June Meeting and Outing of the Boston Paper Trade Association, to be held at Charles River Country Club, Newton Centre, Mass., June 10, a buffet luncheon will be served at the Locker Building from 11:30 on. Dinner will be served in the Locker Building at 6:45, after which the various prizes will be awarded. There will be golf all day, in competition for the new golf championship cup. The outdoor sports include horseshoes, putting, bowling and ball game.

The golf committee consists of Everett Ketcham, chairman, Nelson Feeley, Norman Harrower, E. L. Cummings and Henry Bigelow. Outdoor sports, Howard Wallingford, chairman, Hubert Lockhart, Daniel Abercrombie, Jr., John A. Andrew, Jr., and David Cheever.

WGP Stages Golf Meet For Mill Contacts

The annual Spring golf tournament of the Walker-Goulard-Plehn Company was staged early this month at the North Hills Golf Club, Douglaston, Long Island. Jim Burke was chairman and Elwin Walker, Tom Goulard, Bob Plehn, and a score or more of genial Walker-Goulard-Plehn men proved to be an "unbeatable combination" in the art of dispensing hospitality to their 90 odd guests. After a hearty luncheon 15 foursomes teed off in perfect weather on the sporty North Hills course and the several other non-golfing foursomes whiled away the afternoon at less strenuous diversions.

Handsome prizes were awarded to the following men:

"Kicker"—Phil Coulter, St. Regis Paper Co.

Low Gross: Bert Blake, Converter Corporation; Gerry Dumphy, Newton Falls Paper Mill; Worthie Dodd, Champion Paper & Fibre.

Low Net: George Morrison, Mohawk Paper Mills; Ted Lyman, Missisquoi Corporation; Chas. Leissler, Mohawk Paper Mills; John Johnston, W. Ralston & Company; Walter Sheehan, Missisquoi Corporation; Ted Watson, Detroit Sulphite Pulp & Paper; Al. Burghardt, W. G. P. Company; Ted Murray, St. Regis Paper Company; Lamar Fearing, International Paper Company; Howard Casey, Franklin Paper Company; Don McCall, Racquette River Paper Company; Corb. Walters, Chemical Paper Manufacturing; Dave O'Meara, Jr., W. G. P. Company; Lloyd Plehn, W. G. P. Company.

High Gross: John Penhaker, Hollingsworth & Whitney Company. The company's fall tournament has been scheduled for September 5 at the Hudson River Country Club near Yonkers. At that time the John Woolsey memorial trophy will again be placed in competition.

Civic Group Elects Mohlman

SPRINGFIELD, Mass., May 27—George A. Mohlman, president of the Package Machinery company, has been elected president of Future Springfield, Inc.

E. de Vries Company

EDVECO

PAPER EXPORTERS

ALL OVER THE WORLD

EDVECO

220 E. 42nd Street

New York 17, N. Y.

Grocers to Study Packaged Produce

CHICAGO — A most interesting experiment on the practicality of packaged produce is being conducted jointly by Bursley & Company, wholesale distributors of produce and groceries of Fort Wayne, Indiana, and the National Retail Grocers Association with offices in Chicago. The experiments are being conducted with the full cooperation of many men skilled in produce packaging including J. C. Morris, Ohio Boxboard Company; A. W. Shaffer, DuPont Company; William Stelpflug and A. B. Biddle, Hussman Refrigeration Inc., D. M. Lochner and Neil McKay, Jr., of Bursley & Company Inc., and Ralph C. Russell, Oliver Machinery Company.

The experiment is designed to determine if it is possible to set up an economically sound system of packaging produce for distribution through independent wholesale and retail channels and it is reported that that part of the paper trade allied with the container industry is watching the experiment with a great deal of interest.

Actually, says the Grocers Association, the experiment is really a laboratory method where, by trial and error, a sound system of operation can be worked out that will insure retailers a source of supply of pre-packaged produce. The channels by which fresh fruits and vegetables reach the consumer by way of independent operators differs from those used by centrally organized stores so that the information coming out of the Bursley-National Grocers Association experiment will really help the independent stores the most. The paper trade comes in to the picture, says the Association, "because a number have a definite interest in the future of pre-packaged produce because of the potential outlet for their products. Further information on the results of the experiment can probably be obtained by the trade from the Grocers Association offices at 306 N. Michigan Avenue, Chicago.

Pneumatic Atomizing Nozzle Operates Trouble-free

A new pneumatic atomizing nozzle featuring a removable mounting flange which is part of the nozzle assembly and a monel metal screen or strainer in both the air and water intake chambers of the nozzle body has now been made available by the Spraying Systems Company of Chicago. Atomizing nozzles of this type atomize liquid pneumatically by means of either air, gas, or steam pressure. Water, oil, and liquids with similar viscosities may be sprayed.

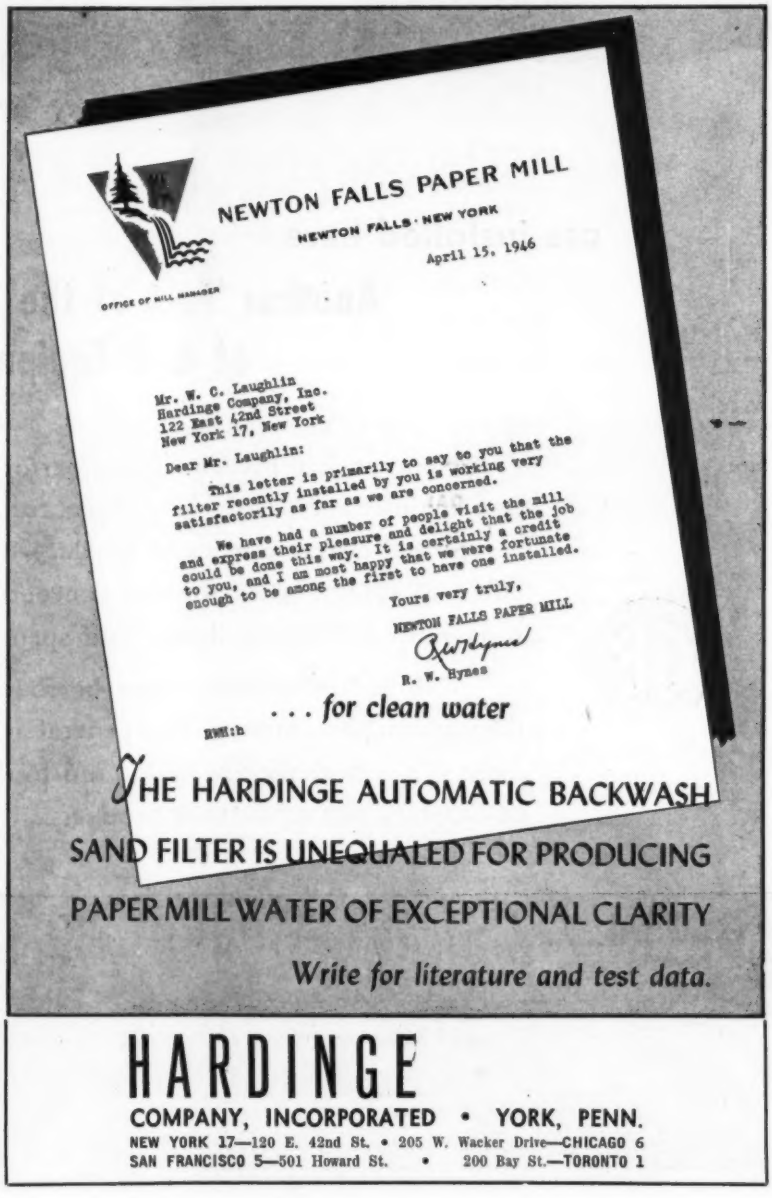
To prevent clogging of the nozzle orifice, core assemblies with fine mesh monel metal screen are installed in both the air and liquid intake chambers of the nozzle body. Screens are removable for easy cleaning. Nozzles are available built of either white plated brass or stainless steel. Regardless of nozzle body and core material, shut-off needle is always stainless steel.

Installation of the nozzle consists of removing the flange from the nozzle and mounting the flange on equipment where required. After the flange is positioned, the nozzle is bolted to the flange. The nozzle body is held to the flange by two bolts. In this manner installation is simplified, yet maximum rigidity is provided.

Southworth Names Lawson Eastern Distributor

PORTLAND, Maine—Melville C. Cole, President of the Southworth Machine Company, reports that effective May 10th, the E. P. Lawson Co., Inc., with headquarters in New York and branches in Philadelphia and Boston, will act as exclusive distributors for Southworth products in the northeastern and middle Atlantic States. The agreement between the two companies was drawn to cover the Southworth line of punching machines of all types, mechanical binding attachments, tab and index cutting equipment, round corner cutters and the Southworth universal joggers.

Both companies, long established in serving the Graphic Arts will thus be able to give to Binders, Printers and Lithographers in the eastern area even better and more complete service than has been possible in the past. For service requirements, Lawson will maintain an inventory of replacement parts as well as a staff of trained mechanics.


NEWTON FALLS PAPER MILL
NEWTON FALLS · NEW YORK
April 15, 1946
OFFICE OF MILL MANAGER
Mr. W. C. Laughlin
Hardinge Company, Inc.
122 East 42nd Street
New York 17, New York
Dear Mr. Laughlin:
This letter is primarily to say to you that the filter recently installed by you is working very satisfactorily as far as we are concerned.
We have had a number of people visit the mill and express their pleasure and delight that the job could be done this way. It is certainly a credit to you, and I am most happy that we were fortunate enough to be among the first to have one installed.
Yours very truly,
NEWTON FALLS PAPER MILL
R. W. Hynes
RWH:h
. . . for clean water
THE HARDINGE AUTOMATIC BACKWASH
SAND FILTER IS UNEQUALED FOR PRODUCING
PAPER MILL WATER OF EXCEPTIONAL CLARITY
Write for literature and test data.

HARDINGE
COMPANY, INCORPORATED • YORK, PENN.
NEW YORK 17—120 E. 42nd St. • 205 W. Wacker Drive—CHICAGO 6
SAN FRANCISCO 5—501 Howard St. • 200 Bay St.—TORONTO 1

Southland Paper Mills at Lufkin, Texas

GOSLIN-BIRMINGHAM EVAPORATORS...

are installed here—

Another 'Fact of the Matter' Example of G-B Equipment Use

Efficiency, reliability, consistent performance, low operational and maintenance costs have been for years outstanding and recognized characteristics of GOSLIN-BIRMINGHAM multiple-effect EVAPORATORS for the concentration of sulphate and soda pulp mill black liquor and spent sulphite acid liquors.

G-B EVAPORATORS may be found in most pulp mills throughout the country. The general acceptance of G-B equipment is a tribute to experience and to the performance records of GOSLIN-BIRMINGHAM products.

GOSLIN-BIRMINGHAM MANUFACTURING CO., INC.

BIRMINGHAM ALABAMA
350 MADISON AVE. NEW YORK

CHICAGO SAN FRANCISCO NEW ORLEANS SEATTLE

let us put your finger on the proper plastics for these jobs . . . . . .

Heat Sealing Plastics for high gloss

Aluminum foil
Paper board
Paper
Glassine
Vegetable parchment

Heat Sealing Plastics for

. . . fibre can fabrication

Heat Sealing Plastics for labels to be placed on

Aluminum foil
Acetate
Cellophane
Paper
Waxed paper
Textiles

Heat Sealing Plastics for moisture and grease resistance

. . . in all types of paper bags and packages

Heat Sealing Plastic coating for

. . . for decorative paper and paper board to achieve improved scuff resistance

Protection against moisture vapor transmission is a "must" in a multitude of businesses today.

Monsanto can help you solve this problem . . . with a series of heat sealing plastics for application on many different materials and on both porous and non-porous surfaces.

In addition these heat sealing plastic coatings impart (1) greater strength, (2) pliability, (3) resistance to grease, acids and alkalies, and (4) improved appearance.

You are invited to consult with Monsanto's packaging specialists, now applying the same technical skills to functional packaging problems as they have for years in the field of decorative packaging. Write, wire or phone: MONSANTO CHEMICAL COMPANY, Plastics Division, Springfield 2, Massachusetts.

VUE-PAK
TRANSPARENT PACKAGING MATERIAL

MONSANTO
PLASTICS
SERVING INDUSTRY . . . WHICH SERVES MANKIND

New Pneumatic Cutter-Blower Saves Time Space Labor

The new Kussmaul trim cutter blower, by means of two flexible telescopic suction tubes, collects trim from slitters. The strips of trim, drawn in bv the action of the combined fan and cutter, are cut into short pieces, instantly released, and blown to a separator which drops them into a storage vault for baling, or directly into a beater for reprocessing. The unit, usually driven by a V belt at 2000 R. P. M., makes all scrap movement automatic, wasting no labor, space or time. The unit, manufactured by the Blower Application Company of Milwaukee, consists of a blower with cutting head and blast wheel mounted in a special fan housing on a single shaft for either V or flat belt drive.

Postwar Transporter Now in Production

Automatic Transportation Company, 149 West 87th Street, Chicago, manufacturer of the Transporter, has completed new improved models of this electric propelled hand truck. Further, Automatic reports postwar Transporters are now in production.

Featuring more than a score of major improvements, the new Transporter will have a potential service life double that of its predecessor, Automatic engineers predict, and the costs of maintenance will be cut in half. The engineers describe the new Transporter as "a more efficient unit with added ruggedness and more effective safety features plus a simplified design that makes for greater ease in inspection, maintenance and adjustment."

Selling price of the postwar Transporters will be the same as for similar prewar models, of which more than nine thousand are now in use in virtually every type of industry. Company officials report that increased production and demand for the Transporter make it possible to offer all industry this improved material handling unit at no increase in selling price.

Texas Company on Lubrication Of the Paper Machine

The Texas Company in its May issue of "Lubrication", a technical publication devoted to the selection and use of lubricants, writes on the Lubrication of the Paper Machine. The article, complete with illustrations, discusses lubrication, bearings and maintenance. The paper machine is large enough and costly enough to warrant this sort of discussion. We recommend the study of this article as convincing proof that the oiler on a paper machine has quite an important job. Free copies of the magazine containing this article may be obtained by writing to the advertising division of the sales department of The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Roller Trackage System Simplifies Handling

A practical theory of the Engineer-Products Company of Chicago in its approach to the handling of paperboard is to keep rolls on the floor and not to lift them unless it is absolutely necessary. To achieve this goal the company has developed trackage systems that are installed in trenches in plant floors. This efficient traction system comes in standard units ten feet each in length. Other lengths, curved trackage or turntables are also available. Systems of trackage can be made to lead into each mill roll stand as required.

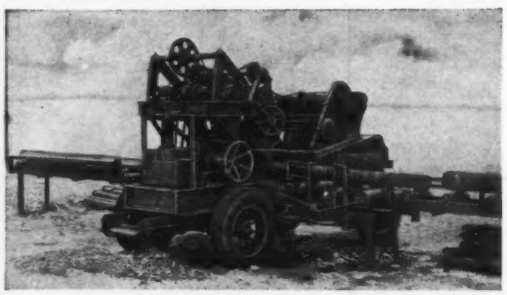
Secret of the system lies in the metals used and the general design of the rollers. The rollers operate on ball bearings so that they move with amazing ease.

In fact, it is said that a small child could push a heavy roll of board along the trackage. The system consists of a series of spaced rollers arranged in a channel iron structure. Heavy steel, checkered, anti-skid, safety floor plates are attached to the channel irons and fill the voids between the rollers. The rollers extend a fraction of an inch above the intervening steel plates. On these rollers rides a specially-designed steel plate, which carries the roll of paperboard. The whole device requires a trench in the floor six inches deep and fourteen and five-eighths inches wide.

The answer to your wood peeling problem

THE NEKOOSA PORTABLE WOOD PEELER

You Are Sure



With it 10 men can do the work of 50.

In these days of labor shortages it has been impossible for many mills to obtain enough peeled wood. Because of the increased production per man the Nekoosa Portable Wood Peeler has made it possible for many mills to obtain peeled wood, which otherwise would have had to handle it rough.

Thus this machine helps assure you of a supply of peeled wood, even though there is a shortage of woods labor.

Large Capacity
Low Cost Operation
No Wood Loss

Nekoosa Foundry & Machine Works Inc.

Nekoosa, Wis. **U. S. A.**

New England Section Spring Meeting

The New England Section of TAPPI held its Spring Meeting at the Weldon Hotel in Greenfield, Mass., Friday and Saturday, May 17-18, 1946. As special guests were members of the Connecticut Valley Division of the Superintendents Association.

The technical sessions were primarily concerned with synthetic textile fibers and finishes but one paper was on the general application of electronics.

Registration began on Friday morning and since there was no formal meeting until that evening it gave the 150 persons who attended ample time to register. Many brought their wives.

Friday afternoon everyone took advantage of the hospitality of the paper mills in the Greenfield area and visited the Erving Paper Mills, Keith Paper Co., Millers Falls Paper Co., and the Esleeck Mfg. Co.

Mr. L. B. Tucker of Crane & Co. was toastmaster of the dinner meeting held Friday night and introduced Mr. Irving N. Esleeck, President Esleeck Manufacturing Co., who welcomed those attending the meeting.

At the business session the election of officers for the TAPPI New England Section was conducted. Those elected for next year are as follows: Chairman, L. B. Tucker; Vice Chairman, C. H. Child; Secretary, H. L. Mellen; Treasurer, H. D. Barker; Executive Committee, P. S. Bolton, Werner Kaufmann, Miss H. W. Kiely, R. J. Procter, G. C. Schmid, E. W. Strecker, F. A. Strovink, and C. F. Young.

The speaker of the evening was Mr. Herbert R. Mauersberger, Technical Editor, Rayon Textile Monthly, and Lecturer at Columbia University. Mr. Mauersberger presented a chart showing a classification of the synthetic fibers which was the basis of his presentation. This chart is not available as it is to appear in a book to be published this fall. The main classifications are natural in origin, which includes the cellulose products such as rayon, proteins, and miscellaneous sources as algins; organic, the coal tar and chemical derivatives such as Nylon and Seran; and the inorganic group which includes glass fiber. At the present time viscose rayon, acetate rayon, Aralac (casein), suprammonium rayon, and Nylon are the most important but conditions are such that other products may be produced at any time in such quantity as to affect the textile market. From the papermakers standpoint, the entry of new synthetic fibers into the textile market will not alter his problems as those which now exist are in sufficient amounts to create manufacturing difficulties.

Mr. Mauersberger stressed that these new fibers from various sources will be an increasing factor in the textile field as it makes possible many combinations of appearance, hand, and wearability. Because they can be made to simulate cotton goods, visual inspection to cull the various fabrics is impossible. The use of the microscope was advocated and slides were shown illustrating the characteristics of the various fibers.

On Saturday morning, Dr. Donald H. Powers, Director of Textile Development, Monsanto Chemical Co., continued the discussion on synthetic fibers. He pointed out that aside from a yield loss that probably the only fibers which may cause papermakers trouble are acetate rayon, Nylon, Vinyon, Saran, Velon, and rubber. Except for rubber, they are all thermoplastic and thus soften when heated; this class should be avoided by paper manufacturers.

Of the surface finishes, some of the large yardage items that are predominately cotton will not cause trouble in pulping and subsequent processing by paper manufacturers but those which are treated with thermoplastic materials or are coated should be avoided. It was Dr. Power's opinion that the portion of the paper industry which uses cotton rags should consider the use of a low grade cotton or should deal with waste, the source of which is definitely known as there is an increasing tendency not only to intermix fibers but to apply resin finishes to all types of goods.

Mr. E. B. Ankerman of the Westinghouse Electric and Manufacturing Co. presented a general paper on electronics in industry. Because of the publicity given to the subject over the past years as evidenced by the newspaper reports on radar, there is a feeling that electronics are adaptable to most applications. However the industrial field is limited as yet to specialized communication, control, and heating problems so that in many cases it may not be economical or practical. As development continues it is expected that electronics will become important in an ever broadening field.

Following an informal luncheon, in spite of bad weather, a few played golf. Saturday evening was devoted to a dinner dance which was held at the Weldon Hotel.

Those who attended the meeting were:

J. J. Aid, Carl Anderson, W. A. Anderson, F. R. Andrews, Earl B. Ankerman, J. E. Apter, P. W. Ayers, C. J. Backus, John L. Bagg, J. P. Bainbridge, Arthur Barea, H. T. Barker, W. J. Barrett, Paul C. Best, Gordon L. Benson, Edwin Bieniek, R. T. Bingham, R. H. Blanker, M. E. Blew, P. S. Botton, H. S. Brightman, Arthur M. Brooks, Eugene Brothers, John H. Brown, S. A. Brown, Robert Chalfant, C. F. Child, W. N. Connor, Joseph Constance, W. L. Crouse, C. C. Decker, A. J. De Couaghe, Albert W. Dempsey, Ernest Derosier, Paul Donaghy, R. F. Driscoll, A. L. Dubeaux, Wm. Eastburn, Wm. F. Erisman, Irving Esleeck, Ernest Eyles, Howard Ferguson, W. L. Foote, J. A. Fraser, A. W. Frey, Francis N. Gillespie, Henry L. Gilson, P. P. Gooding, Samuel Guastella, Daniel H. Gutermann, Everett Ham, W. J. Hartman, Arthur L. Hobday, P. W. Horeysec, David Housen, John Janson, Henry C. Johnson, George Jones, O. C. Kees, Miss Helen Kiely, R. E. Kilty, F. S. Klein, Warren S. Kumblad, A. C. Lamoureaux, L. R. Lane, B. G. Leavitt, Herman S. Lenard, L. F. Loutret, V. A. Love, N. J. Loveland, Cecil MacIntyre, Ronald C. Malloch, Craig Maxwell, Robert Mannheim, J. McGarry, F. D. McGillicuddy, Jr., George McTeague, Edward McQuillan, H. L. Mellen, James Merrill, H. R. Miller, John Millett, Miss Jessie Minor, A. L. Mitchell, T. S. Morse, R. H. Mosher, H. L. Moss, Frank W. Nyborn, J. J. O'Brien, Chas. R. O'Neil, G. F. Parks, J. B. Pendleton, Henry Perry, H. B. Peterson, John Pollock, B. J. Poopor, F. J. Powers, J. J. Powers, T. R. Probst, S. J. Quattrocchi, Charles Raee, A. E. Ragnier, Edward O. Reed, Vincent Richard, Edward C. Richardson, J. E. Ryan, Harold Sager, T. C. Schmid, Albert F. Scott, Paul J. Shirley, Jr., F. L. Simons, N. G. Sixt, C. P. Slocum, A. L. Smith, Claud Smith, Leon E. Smith, Glendon A. Soule, T. W. Stevens, W. Strecker, Vernon L. Striebel, R. W. Smith, J. E. Sullivan, C. J. Szatkowski, W. P. Thomas, Ralph Thompson, L. B. Tucker, John Tupper, Ronald T. Tuttle, Fred Van Voorhis, Peter J. Volanakis, Walter E. Wentworth, Carl H. Wilson, Raymond C. Winkler, W. H. Wood, Wm. Woosnam, Arthur M. Worthington, Jr., Jack Fife Wright, C. Frederick Young, Albert Yraola.

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

W. L. Cook, Editor

For Want Of—

The ancient lesson in preparedness which began "For want of a nail—" and went on up from there to national significance bids fair to lose all of its power in the light of present industrial experience. Clothing, they tell us now, is in short supply because there is a shortage of the special material which is used for lining pockets. At least one candid native of the coal mining country complained that his cost of living had risen because the Government had put a tax on certain daily supplies which he deemed essential to his welfare. All this is an old story to the paper manufacturer whose troubles, he has found, seem to come at him from every quarter, now in groups, now one by one. Labor, pulp, casein, machinery, power, shipping facilities—shortages in all of them have been heralded as critical—and now starch looms as a source of further embarrassment. to those who are accustomed to use it in their manufacturing processes.

The cause for this condition, say those who are close to the industry that produces starch, is a combination of acutely critical demand from a world that calls for more and more food, and of acutely shifting policies on the part of those who alternately hold out hopes and then change their minds. In the present case the basic material is corn, and under price ceiling policies that are only too familiar in their deterrent effects, corn was not coming into the open market in sufficient quantity to meet all of the demands for it. More than a month ago the interests which make it their busines to watch the corn supply closely were in conference with government agencies, and at that time it was determined that steps should be taken to encourage the marketing of corn. These steps took the form of a subsidy or bonus plan under which the Secretary of Agriculture would pay a bonus of 30 cents a bushel above ceiling for fifty million bushels of corn. A portion of this, it was understood by representatives of the starch industry, would be channeled to wet processors, for manufacture into starch products for industry.

This program was concurred in by the Office of Economic Stabilization, OPA and the Department of Agriculture. All of the industry felt that this was a very definite step in the right direction and at an industry meeting in Washington, April 29, the discussion centered on insuring a continued supply of corn starch products to essential domestic manufacturers, and on the amount of corn that would be necessary to operate the wet milling industry effectively.

But, it was announced recently the entire thirty-two million bushels of corn obtained under the bonus plan are to be exported either as processed grain such as starch, syrup, grits, cornmeal, or the grain itself by June 30th this year. Thereby the critical production situation caused by the shortage of corn starch products not alone has not been alleviated but is now more critical than ever before, for the reason that the Government has siphoned the best and the most available corn from the market—then abandoned the program and substituted a 25 cent ceiling price increase. It is difficult to comprehend if the Government abandoned its 30 cent program though incomplete how a private company can be expected to buy corn at a 25 cent increase basis, even though one may buy lower grades. The answer is clear. The program has been in effect a couple of weeks and only negligible quantities of corn have been forthcoming and such corn is moving on either a barter or a black market basis. It seems apparent that the information given by various Government officials to thousands of manufacturers using corn products was misleading and incorrect inasmuch as they were assured that the urgency and importance of their problem had not alone been recognized but they had been led to believe that suitable action would be taken promptly.

It is recognized, of course, that some of the experiences that industry is meeting during the current period had their beginnings a long while ago. It also must be apparent that seemingly one problem is solved or laid away under temporary relief only to yield in its emphasis to another. Certainly the paper mill has problems of its own enough to keep an active set of brains running at full speed to plan for the morrow, and it cannot be said that the mills are anxious to see any of their materials advanced in cost without compensating increases in their own price scales.

But they are watching, with a sympathy that is rendered more acute because of their own first-hand experiences with regulation, the effects of artificial manipulation of another industry whose product is listed as among those that go to make paper.

Calendar of Coming Events

June 6-8, 1946—Technical Section, Canadian Pulp and Paper Association, Royal Edward Hotel, Port Arthur, Ont.

June 14-15, 1946—TAPPI Empire State Section, Thousand Islands Country Club, Alexandria Bay, N. Y.

June 17-20, 1946—American Pulp and Paper Mill Superintendents Association, Annual Convention, Poland Springs, Me.

June 28-29, 1946—TAPPI Maine-New Hampshire Section, Rangley Lakes House, Rangley Lakes, Maine.

November 4-6, 1946—National Paper Trade Association, Fall Convention, Palmer House, Chicago, Ill.

TAPPI Notes

George S. Carroll, formerly of the Monadnock Paper Mills, is now manager of the Hopper Paper Company, Reading, Pa.

J. D. Davis is now general manager of the Dill & Collins Division of the Mead Corporation, Philadelphia, Pa.

E. A. Schilt, formerly of the Navy, is now with the Zaremba Company, Buffalo, N. Y.

A. G. Hellstrom, formerly of Fraser Companies Ltd., is now with Paper Machinery Ltd., Montreal, P. Q.

Robert E. Bowen has succeeded E. P. Hill as official representative of the North Carolina Pulp Company, Plymouth, N. C.

Miss Louise E. McGrath is now president of the Booth Chemical Company, Elizabeth, N. J.

Bernard F. Hale, formerly of the Army, is now with the Dilts Machine Works, Fulton, N. Y.

Pierre Mougeot, formerly of James Maclaren Company, is now with Milton Hersey Company, Montreal, P. Q.

Herbert A. Kaufmann, formerly of the American Maize Products Company, is now director of development and research for the American Molasses Company, 120 Wall Street, New York, N. Y.

The TAPPI Maine-New Hampshire Section will meet at the Rangeley Lakes House in Rangeley, Maine, on Friday and Saturday, June 28-29, 1946. There will be a program of technical papers presented at that time, Dr. John Parsons of Hollingsworth and Whitney Company being chairman of the committee in charge of this part of the meeting. There will also be facilities for golf and fishing.

Charles Pinat, general director of Papeteries du Marais, Bruc du Pont de Lodi, Paris, France, and U. Gdillet of St. Cal Groupement d'Importation de la Papeterie, Paris, France, are now visiting in the United States.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1946		Corresponding Weeks—1945	
April 13	103.6	April 14	87.4
April 20	102.5	April 21	90.7
April 27	100.6	April 28	87.0
May 4	107.3	May 5	90.7
May 11	102.8	May 12	85.4
May 18	*98.3*	May 19	92.5

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	86.7	89.4	90.2	88.1	89.8	91.2	80.8	88.6	90.2	95.9	95.5	91.0	89.7
1946	94.7	98.4	104.4	*102.7*									

COMPARATIVE YEARLY SUMMARIES

	1939	1940	1941	1942	1943	1944	1945	1946
Year to Date	80.2	86.0	92.1	101.8	89.0	88.3	88.5	*100.1*
Year Average	83.4	85.6	97.4	90.4	87.8	88.1	89.7	

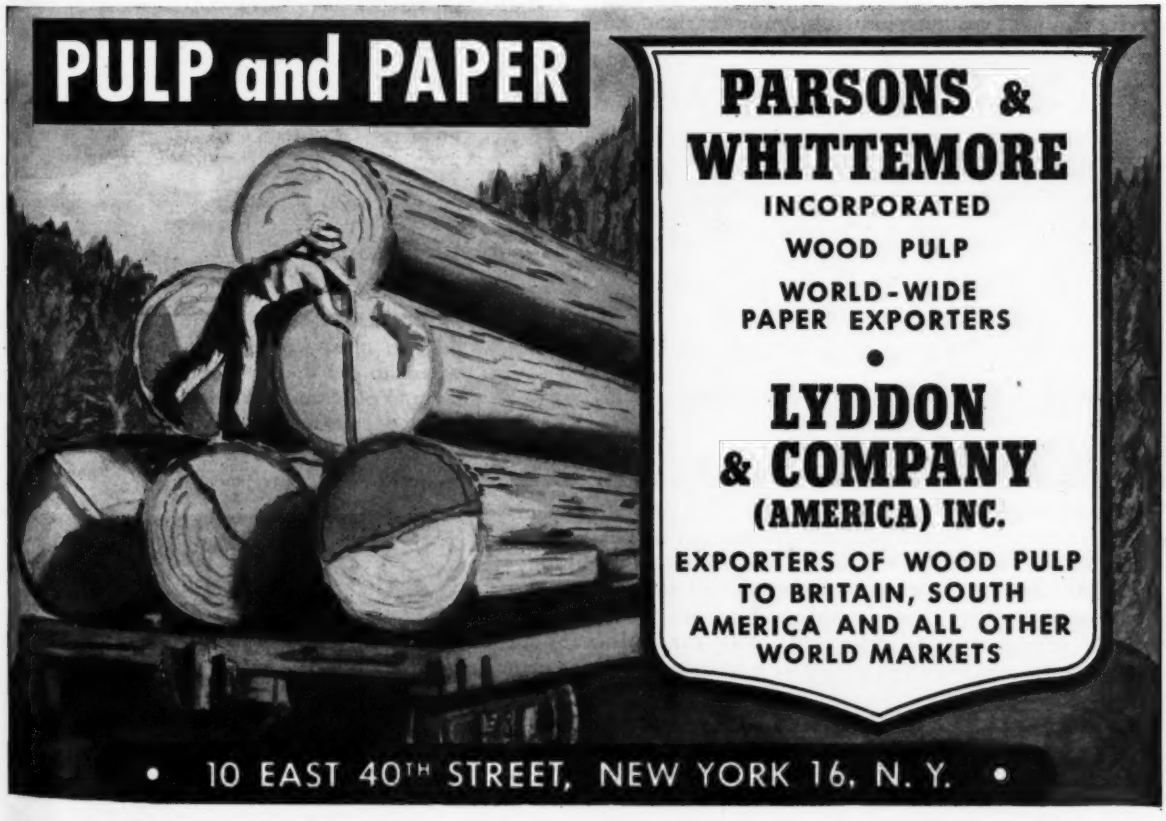
*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1946		Corresponding Weeks—1945	
April 13	101	April 14	97
April 20	101	April 21	98
April 27	95	April 28	99
May 4	101	May 5	97
May 11	97	May 12	94
May 18	*92*	May 19	97

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	91	95	97	97	96	96	86	90	91	97	95	85	93
1946	90	97	100	*99*									

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.



Words and Pictures
for the Young Mill Man

from E. I. du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Dept., Wilmington 98, Delaware

1 YOU'LL HEAR PEOPLE CALL IT A GAME—but it's not. Papermaking is a business, conducted in a serious way for serious stakes. You're out to make good paper at least cost—to give service that wins customers not just for one carload, but for *years.*

3 YOU'VE SEEN EVIDENCE, in your own mill laboratories, that chemistry is important in good papermaking. One of Du Pont's chemicals for papermakers is "Lignasan" bactericide and fungicide. Bled into the system at trouble spots, or added at the beater—about four ounces per ton of dry fiber—"Lignasan" controls slime, keeps the system clean, all the way to the dry cans. 'Most any old-timer can tell you about it, or check with your Du Pont man.

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

2 YOU CAN'T CLIMB FAR just on your looks. You must know your job—and know where to get the answers if *you don't* know them. You can often get authoritative, specialized counsel from your suppliers. One good source is Du Pont.

Du Pont Lignasan
REG. U. S. PAT. OFF.
Bactericide and Fungicide
CONTROLS SLIME—PRESERVES PULP

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Supercalendering of Paper Machine Coated Paper*

By E. E. Thomas[1]

Abstract

This paper describes the fundamental principles governing supercalender action and its effects on various grades of paper including the conditions to be considered in the attainment of the specific objectives. Information on the various types of filled rolls available and their influence on supering results is also included. Reference is made to the trends in design and operation of supercalendering equipment to keep pace with the machine coating production.

Mineral coating the surface of paper covers a period of many decades, but the practical application of coating the paper while it is in the process of being manufactured covers a period of the past fifteen years. Like other major developments, the rate of progress in the first few years was slow because of the conservative attitude of the paper and printing grades and the mediocre results obtained in processing through lack of technical data and experience. The rate of progress in the past ten years is indicated by the large tonnage produced today and the demands for greater production.

Much of the progress made can be attributed to enterprising management in sponsoring and pushing research and development programs in coating technology and the accumulation of valuable data in cooperation with pigment and adhesive manufacturers. On the consumers' side developments in printing technology and technique have contributed largely to furthering the demands for this paper.

The immediate problem facing the paper manufacturer is in meeting productive demands of the publication field for this grade of paper in the shortest space of time. The present development in machine coating is in the number of installations being made or contemplated and orders placed with equipment builders are indicative of the steps being taken to meeting the demand.

The future of paper machine coating is bright and with promise for its acceptance by the graphic arts industry served to establish it as a major contribution in papermaking and its field of application will be broadened as coating technique keeps pace with the present and future developments in coating formulas in the fields of pigmented, resinous, and synthetic compound coatings.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] The Appleton Machine Co., Appleton, Wis.

Mechanics of Calender and Supercalender Action

Before entering into the subject matter of supering coated paper, the author is of the opinion that an outline of mechanics of supercalendering may be of assistance to those interested in this phase of operations. To clarify, it will be necessary to refer by comparison to the calender stack and to state that the only part to be considered as far as effects on paper is concerned is the nip.

Mechanics of Calender Action

The complement of chilled iron rolls in a calender are inert or nonresilient bodies and in calendering operations do not suffer deformation. Under these conditions the essential property of creep of material causing burnishing action on paper or coated surface is missing. If, as a result of calendering, the paper surface is polished or shined such effects originate from within the paper itself by virtue of its resilient qualities causing a creep of paper against roll surfaces. A calender stack, therefore, only contributes its power to squeeze or compress.

Mechanics of Supercalender Action

The only physical difference between calender and supercalender is in the substitution of alternate inert chilled rolls by filled rolls made of material possessing resilient or elastic properties. The difference in surface effects of the paper between calender and supercalender operation does originate from the use of these filled rolls.

The behavior of filled rolls under operation is a manifestation of the law governing the behavior of resilient or elastic bodies and is known as the law of "rolling friction" and in brief is explained as follows: "When an inert roll is pressed against a resilient roll a depression is created in the softer roll at the point of contact and the material is pushed out on either side of the arc of contact. If the rolls are rotated the resilient material will start to creep or flow in direction opposite to the direction of rotation causing a sliding of material against the inert roll surface and producing a burnishing or polishing action." Intensity is governed by the amount of resiliency provided, the relative diameter of rolls in contact, the nip contact pressure, and the speed of rotation. The supercalender, therefore, contributes its power to burnish, smooth, or polish the surface in contact with the chilled roll which in the case of coated paper is the coating color.

From the above description of supercalender ac-

tion, it will be apparent that the proper selection of filled rolls to suit the conditions is of major importance for it is the behavior of these rolls that influence results in finish values of coated papers.

Filled Rolls

Before the advent of paper machine coating, supering demands on all grades of paper were fulfilled by the use of the hard blue paper type roll for uncoated and semicoated papers and the soft raw cotton roll for the conversion or heavy coated papers.

In the paper machine coated group of papers, the blue paper roll served to satisfy supering demands of the wash or light weight coatings but with the increase in coating weights this type was found unsatisfactory and was replaced by the raw cotton type with much improvement in finishing qualities. However, experience indicated that their life was too short for economy of production. The insistent demands for a type having the durability of the blue paper roll and the finishing qualities of the raw cotton roll was a challenge to roll manufacturers.

Through close cooperation of manufacturers of machine coated papers and by research and experience, a type of roll fulfilling the requirements was developed and has been in satisfactory operation for a period of the past four years thereby completing the group of roll types needed to meet all demands.

This experience in the application of rolls suitable for paper machine coated papers furnished further evidence in support of the claim that no one type would satisfy the demands on all grades of coated papers. The weight of coating used was a general guide to the type roll desired and that the three types: hard, medium, and soft rolls could be assigned for use to the three groupings of paper such as uncoated or semicoated, paper machine coated, and conversion or heavy coated, respectively.

Roll Selection

Filled rolls have a direct influence on the attainment in surface qualities and, therefore, are more closely related to the coating properties than to the physical properties of the paper. The prime factor to be considered in their selection is the amount of nip action required by the coated paper to produce the desired result in gloss or finish or smoothness. The amount of clay and other pigments used in the coating and the resilient properties of paper determine the amount and intensity of nip action required. Some papers demand the use of rolls giving an intense nip pressure with less creep such as provided by use of hard roll while other papers require the use of rolls with more creep and less intensity of pressure, such as the soft type roll. Among other considerations in roll selection is the limitation in ability of existing supercalenders to meet the demands of speed or pressure essential to results with certain type rolls.

Modern Supercalender

To maintain finishing capacity in keeping with machine coating production it is essential that the modern supercalender be designed with the objective of eliminating as much as possible the down-time resulting from mechanical failure under the increased widths, speeds, pressures, and weight involved in supering paper machine coated paper.

To meet the demands in widths commensurate with paper machine trims and speeds, the framework is massively constructed of fabricated welded steel and designed to permit quick and easy removal of all rolls.

Rolls are equipped with antifriction bearings to provide a stack free from oil accumulation and maintain rolls in vertical alignment at all times. This avoids paper wrinkling and damage to filled rolls. Bearings are housed in oil-tight and dustproof housings and are lubricated by a forced feed system. Endwise expansion of rolls is provided for by the bearings on off drive end.

The more exacting demands for precision control of pressure, speed, and web tension, respectively, have been met with the aid of developments in hydraulic pressure control equipment. The finer control in speeds has been attained by the change from a.c. to d.c. electric drives and electronic control. The use of electronic interlocks protects the stack against damage caused by errors in operating procedure.

Automatic control of web tension has been made possible by means of the electric motors and breaking type generators interconnected with main drive to assure uniformity in tension regardless of speed changes.

The unwind and windup apparatus is of the fixed centerwind type equipped with spools resting in antifriction bearings supported on suitable stands. The unwind stand is located near top of stack to shorten draw and eliminate draw wrinkles. The windup stand is located on floor close to bottom roll. Both unwind and windup apparatus is similar in appearance and can be equipped for manual or automatic control of web tension. In the conventional arrangement the unwind tension is hand controlled and on the windup is electrically controlled.

The stacks are furnished complete with its complement of spread, guide, and fly rolls balanced to compensate for the high speeds and mounted in antifriction bearings supported in adjustable brackets. The chilled iron rolls are provided with motor operated oscillating type doctors interlocked with main drive to prevent oscillation until rolls are in motion. Intermediate chilled rolls are bored for admission of steam and provided with steam joints.

The hydraulic system for use in applying pressure and in separating rolls is self-contained and comprises hydraulic cylinders, pump, storage tank, and pilot control valves, etc. All apparatus is protected against excess pressure.

The bearing lubrication system is also self-contained and comprises pump, filter cooler, flexible hose connection with metering type sight feeds to each bearing of main rolls.

Stacks are made to suit the conditions and are built in widths ranging from 60 to 200 inches and above. They have a complement of ten to twelve rolls including a double finishing element and are designed to meet the demands of machine coating for speeds up to 1800 f.p.m. and bottom nip pressure of 2000 pounds per inch of face.

Complete units include suitable sized electric drive and controls for direct drive through speed reducer to bottom roll.

Supercalendering Machine Coated Paper

It is not the intention to enter into a discourse of papermaking or coating technology but to deal with such items as are related to supercalender procedure. The process of conversion or supering is an important factor in the production of machine coated papers. Through this procedure, the latent qualities of the coated sheet are made visible and suitable for

printing purposes. Supering the coated paper does not add to its quality but merely enhances the latent properties of the coating by mechanical action. This result, therefore, is more closely related to the coating than to the papermaking process. The standard of quality in the surface results of supering is to a major extent established by coating technology and technique. The control of quality is in the hands of technicians operating from the laboratory and through them should emanate the changes in coating formula or procedure to attain the standard in results. Not all of the responsibility in quality can be placed on the coating process, because supering action and results are also influenced by the quality of the base stock.

Paper Specifications

The specifications covering the requirements of coated paper for printing purposes have been well standardized through experience, and paper made meeting these specifications is satisfactory for the supering process. The chief requirements for economical and quality results in supering is uniformity in such properties as moisture content, resiliency, weight, caliper, and density. All of these properties influence the surface qualities such as gloss, smoothness, shade, and finish. Weight, caliper, and density are paper properties influencing the life of filled rolls and productive capacity of the stack. Uniformity in moisture content and resiliency are essential to uniformity in surface values, stretch, or shrink qualities of the finished product.

Coating Specifications

The coating formula is governed by the items covering surface qualities as specified by the customer and with due consideration of the limits in ability of the supercalender to assist in the attainment of these qualities. The general specifications covering coating requirements from a supering viewpoint call for a uniform application of well dispersed pigments and adhesive possessing the necessary bonding properties and having resilient or elastic qualities commensurate with paper resiliency and stretch.

Operating Procedure

With coating technology in the hands of the control laboratory and operating procedure established on one grade of paper together with the use of modern supercalendering equipment, the problems of the stack operator are simplified and permits his maintaining productive schedules.

Paper to Stack

For maximum production, paper from machine should be rewound and edge trimmed. This procedure insures a uniformly wound roll and with undesirable paper culled out slow down or stoppage for breaks in paper is reduced. The rewound rolls assist in maintaining uniform finish and web tension with less tendency for paper draw wrinkles and marking of filled rolls. The practice of allowing paper machine rolls to season before supering makes for uniformity in moisture content and better supering.

Stack Operation

Running procedure is confined to miscellaneous adjustments essential to attainment of results in finish and to maintain roll surfaces in good condition to avoid interruption in production. An experienced operator will keep a close watch for conditions in both paper and stack that may lead up to a possible interference with smooth operation. The major portion of the operator's time is devoted to noting behavior of paper in running and of inspecting results of supering.

Paper from Stack

Paper from stack should receive a final inspection as it is being rewound and undesirable paper removed. Edges should be trimmed and ends of roll wire brushed to remove fuzz and to improve appearance. Rewound rolls of supered paper assist in better lay of paper in printing presses, better printing results, and a more satisfied customer.

Summary

The rapid developments in machine coating paper and in the printing field and its acceptance by the graphic arts industry has established this phase of paper manufacture as a major contribution of the paper industry.

The scope in application will broaden as developments in coating technology advance, not only in pigmented coatings, but also in the field of synthetic compounds and resin coating.

To maintain economy in conversion of paper machine coated papers, supercalenders must keep pace with paper machines in both width and production capacity. This makes obsolete the use of the prewar conventional supercalender in the field of coated paper, where conditions require modern units of massive construction to accommodate the increase in width, pressure, speed, and power.

Supercalendering is a mechanical conversion process by means of which the latent qualities of a coated paper are made visible and that its action does not add anything to the latent qualities of the coated paper but only enhances such qualities.

Supercalender action has a direct bearing on the surface values of the coated paper and is closely related to the coating process. Responsiveness to supercalender action is proportional to the quantity and kind of pigments used in coating and upon the physical characteristic of the paper. The attainment in end results is largely dependent on the quality of coated paper furnished by the paper mill to the supercalender.

The supercalender can only contribute its power to rub or burnish the surface of coated paper and that such burnishing action is dependent upon the amount of resiliency provided by filled rolls and of the paper being supered.

Burrell and Neidig Form Chemical Consulting Firm

Harry Burrell and C. P. Neidig have announced the formation of Burrell & Neidig, an industrial chemical consulting firm with offices at 115 Broadway, New York City.

Mr. Burrell was formerly Director of Research of the Heyden Chemical Corporation, Garfield, N. J., laboratories, and Mr. Neidig was in charge of the Market Research and Technical Service Group for the Heyden Chemical Corporation.

Burrell & Neidig plan to consult on formaldehyde and its uses, plastics and their raw materials, protective coatings, sales development work on new products, research administration and market surveys for the chemical and allied fields.

Pacific TAPPI Meets at Gearhart, Ore.

The Pacific Section of the Technical Association of the Pulp and Paper Industry met jointly with the Pacific Division of the Superintendents Association at the Gearhart Hotel Gearhart, Ore., on May 16-18, 1946. More than 350 attended. H. W. Bialkowsky of the Weyerhaeuser Timber Company presided for TAPPI and C. E. Ackley for the Superintendents.

Registration and a general get-together featured the Thursday program. On Friday morning both groups held business meetings for the consideration of the officers' reports and election of officers. The following officers of Pacific TAPPI were elected: Chairman—G. H. Galloway, Crown Zellerbach Corporation, Camas, Wash.; Vice Chairman—J. L. McCarthy, University of Washington, Seattle, Wash.; Secretary-Treasurer—Robert M. True, General Dyestuff Company, Portland, Ore.; Executive Committeemen—Milton J. Maguire, Hercules Powder Company and Harold W. Bialkowsky, Weyerhaeuser Timber Company, Pulp Division, Everett, Wash. The chairman was instructed to express to W. R. Barber the appreciation of the Section for his extensive work in behalf of the Section relative to the Shibley Award and other matters. The Section expressed itself as being in favor of holding its regular meetings, beginning at 2 p. m. and continuing through the evening.

At the general session that followed the speakers were R. G. Macdonald, Secretary-Treasurer of the Technical Association of the Pulp and Paper Industry and James Ritchie of the United States Pulp Producers Association. Mr. Macdonald discussed at length a number of the major problems relating to the Association's extensive activities. Mr. Ritchie talked on "Some Aspects of the International Pulp Situation" in which he outlined the statistical position of the industry, the effect of OPA ceilings, labor shortages and foreign imports. The amount of wood that will be available to the industry is the most important problem to be solved.

C. E. Ackley of the Lebanon, Ore., mill of the Crown Zellerbach Corporation presided at the Friday luncheon, following which Raymond L. Barton of the Michigan Paper Company, Plainwell, Mich., and President of the Superintendents Association was the principal speaker. Mr. Barton reported on the plans for the Poland Spring meeting and on the preparation of an information booklet on chemicals used by the industry being prepared by the Association and its affiliated members.

At the general session held in the afternoon Gus Ostenson of the Camas Mill of the Crown Zellerbach Corporation presided. J. E. Goodwillie of the Beloit Iron Works, Beloit, Wis., talked on "Modern Paper Machine Design in which he discussed some of the new features being included in the paper machines built by his company. Following this a papermaking panel consisting of Gus Ostenson, J. E. Goodwillie, Anton Siebers, C. E. Ackley, Fred Riley and Austin Nickels discussed this paper and other papermaking subjects.

The pulping group, presided over by G. F. Alcorn of the Weyerhaeuser Timber Company considered the three following papers: "Some Observations on the Effect of SO_2 Concentration on the Rate of Sulphite Pulping" by William Pittam, Pulp Div., Weyerhaeuser Timber Company; "The Modernization of Acid Plants" by Leo C. Kelley, British Columbia Pulp and Paper Company; and J. A. Wilcox of the Electric Steel Foundry Company, Portland, Ore., discussed some features relating to multistage washing in kraft mills.

A dinner and dance was held in the evening. On Saturday morning nearly all attending the meeting were present at the Men's Breakfast, which was presided over by Z. A. Wise. This affair has become a fixture of this annual joint meeting, and assures a full attendance at the morning sessions.

At the general session which followed, G. H. Galloway presided and the following papers were presented: "Paper Sizing" by R. G. Mispley of the Crown Zellerbach Corporation. This was a review of the general problems relating to the sizing procedure. Milton Maguire of the Hercules Powder Company, Portland, Ore., discussed the current trends in the rosin supply. The future supplies of rosin for the paper industry appear to be somewhat dependent on ceiling prices for certain grades and the extent to which rosin will be exported.

John D. Rue of the Hooker Electrochemical Company, Niagara Falls, N. Y., discussed "Trends in Bleaching Chemical Wood Pulp." The current procedures for bleaching both sulphite and sulphate pulps were outlined. Victor C. Haner of the Puget Sound Pulp and Timber Company, Bellingham, Wash., talked on "Construction Trends and Problems in the Pulp Industry." Mr. Haner briefly presented the current materials procurement problem and indicated progress is being made in reducing machinery vibration. In the future there will be more automatic controls. Because of the shortage of lumber some construction is proceeding using concrete slabs for flooring, roofing and siding. Precast wall sections are being studied. Following a brief talk by Joseph Holveck of the Worthington Pump and Machinery Company, Harrison, N. J., a sound film was shown of the installation of the Worthington hydraulic barker of the Soundview Pulp Company mill at Everett, Wash.

R. S. Wertheimer of the Longview Fibre Company presided at the luncheon at which Col. A. R. Heron of the Crown Zellerbach Corporation spoke on "Who Makes Jobs." In the afternoon a golf tournament was held. Low gross was won by Gus Ostenson. In the evening following a cocktail party R. S. Hatch of the Weyerhaeuser Timber Company presided as toastmaster. The feature of this affair was the presentation of the Shibley Award to the junior member who presented the best paper during the year. Awards were made to William Pittam of the Weyerhaeuser Timber Company, Longview, Wash., and Peter M. Wilkie of the Crown Zellerbach Corporation, Camas, Wash. Secondary awards were made to Russell Graff, Longview Fibre Company, Longview, Wash., Oliver P. Morgan, Weyerhaeuser Timber Company, Longview, Wash., and to William F. Abbot, Puget Sound Pulp and Timber Company, Bellingham, Wash. The presentations were made by Gunnar W. E. Nicholson, President of the Technical Association who commended the Section and the northwest industry for its many displays of leadership.

Production of Bleachable Sulphate Pulps From Rapid-Growth Douglas Fir*

By J. Stanley Martin

Abstract

Unbleached sulphate pulps of medium bleach requirement and good strength qualities were produced by treating rapid-growth Douglas fir with cooking liquors of 33.9 and 50.6% sulphidity. Bleachable pulps were thus obtained by the use of the same time and temperature conditions of pulping that are normally employed for the production of ordinary kraft pulps.

Multistage bleaching experiments involving different chlorine partitions gave bleached pulps high in whiteness but variable as to strength. The higher sulphidity pulp seemed to bleach slightly easier than the lower sulphidity pulp, although the bleaching conditions were not exactly the same. A bleached pulp was obtained at each sulphidity that had a very good color, a fairly high alpha-cellulose content, a low ash content, and strength values that seemed to be sufficiently high for use in white papers requiring high strength properties.

Bond papers with a high degree of whiteness and a good formation were made. Such qualities as porosity, opacity, and gloss were satisfactory, but considerable strength was lost in converting the pulp into paper.

In a study at the Forest Products Laboratory on the sulphate pulping of rapid-growth Douglas fir for the production of strong white pulps and paper, bleachable pulps were made with cooking liquors of 33.9 and 50.6% sulphidity. The pulps were bleached to a high degree of whiteness by multistage bleaching methods with chlorine partitions determined by small-scale bleaches. Bond type papers were made from the bleached pulps.

This investigation is part of a general study at the Laboratory to find means of increasing the utilization of Douglas fir for pulping. The object of this part of the investigation was the production of bleachable sulphate pulps from this species for use in bond and other high-grade white papers. Since nothing was available in the literature concerning the bleaching of this species by multistage methods, several small-scale bleaching experiments were made to aid in the selection of conditions suitable for bleaching the Douglas fir pulps.

The selection of the cooking conditions used for the production of the bleachable pulps was based on previous pulping experiments on this species in which several of the fundamental variables of the sulphate process had been extensively studied. In the pulping of Douglas fir by the sulphate process, it was found that increasing the ratio *(1)* of total chemical to wood in small increments from 15 to 35% increases the total and alpha-cellulose contents, the color, and the tearing strength of the unbleached pulp, and decreases the total yield, the lignin content, the Roe chlorine number, and the bleach requirement of the pulp. On the basis of these results, total chemicals equal to 30% of the weight of the moisture-free wood were selected as one of the cooking conditions for the production of a bleachable pulp of suitable yield. According to the data cited, the use of a lesser quantity of total chemicals would result in a pulp more difficult to bleach. The chemicals in the cooking liquor were in the ratio of 2 parts of sodium hydroxide to 1 part of sodium sulphide which is equivalent to a sulphidity of 33.9%. In the previous work on the effect of sulphidity *(2)* it was found that at constant alkalinity the greatest changes in yield, bleach requirement, and pulp quality, take place between 0 and 34% sulphidities. In this range, there is a progressive decrease in yield and bleach requirement and an increase in such other qualities as purity and strength properties. Further increases in sulphidity up to 100% result in only slight changes in yield and pulp quality. These results, however, were based on digestions employing a lower chemical-wood ratio, hence the optimum sulphidity for the particular chemical-wood ratio selected for these experiments was not definitely known.

TABLE I.—PHYSICAL PROPERTIES AND CHEMICAL ANALYSIS OF DOUGLAS FIR PULPWOOD FROM SHIPMENT 1528

Physical Data			
Tree and log, No.	2–21	2–11	2–1
Location in tree	Top	Middle	Butt
Age, annual rings	26	41	53
Rate of growth, rings per inch	5.3	5.3	5.3
Density, pounds per cubic foot	24.5	24.9	27.4
Moisture content, %	57.7	46.0	42.6
Heartwood by volume, %	21	59	64
Springwood by volume, %	80	78	66
Chemical Data			
Total cellulose, %	59.5	60.6	60.6
Alpha-cellulose, %	43.1	44.3	44.4
Lignin, %	26.9	27.3	26.9
Total pentosans, %	10.1	5.8	8.6
Solubility in: Alcohol-benzene, %	2.2	2.6	3.6
Ether, %	.8	1.5	2.0
1% NaOH, %	13.3	14.5	15.1
Hot water, %	4.0	4.5	5.3

It should be mentioned that pulping conditions were so selected that they could be used with the temperature-pressure cooking curves normally employed in kraft pulping. The conditions chosen minimize the reduction in pulp yield encountered when bleachable pulps are produced by lengthening the cooking cycle only.

The Douglas fir (*Pseudotsuga taxifolia*) wood used in these experiments was from a total of eighteen logs from a single young tree of rapid growth. It was a part of a shipment (1528) cut from a fairly dense stand in Snohomish County, Washington, and furnished through the courtesy of the Pacific Northwest Range and Experiment Station.

As part of the evaluation of this tree, disks were cut from the middle of three logs—one each from the butt, middle, and top locations. The physical and chemical properties of the wood from each location in the tree are given in Table I. Except for these three logs, which were used in a different pulping study, the logs from the rapid-growth tree were used in this investigation irrespective of their location in the tree.

Except for a rather low wood density, the data in Table I show normal wood properties for this type

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Engineer, Forest Products Laboratory,[3] Forest Service, U. S. Department of Agriculture.

[3] Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

TABLE II.—SULPHATE PULPING DATA ON DOUGLAS FIR (SHIPMENT 1528)

Cooking and Yield Data [1]

	Wood		Chemicals Charged: Concentration					Chemicals Charged: Per 100 Pounds Moisture-free Wood						Chemicals Consumed				Yield of Moisture-Free Pulp (Average)		
Digestion No.	Moisture, %	Moist weight, lb.	NaOH, g. per liter	Na_2S, g. per liter	Total g. per liter	Total Na_2O, g. per liter	Total effective alkali as NaOH, g. per liter	NaOH, lb.	Na_2S, lb.	Total lbs.	Total Na_2O, lb.	Total effective alkali as NaOH, lb.	Sulphidity, %	Ratio of combined to total alkali, %	On moisture-free wood, %	Total effective alkali as NaOH, %	Black liquor density at 15° C., °B.	Screened, %	Screenings, %	Total, %
2514, 2515	27.4	137.7	40.00	20.00	60.00	46.90	50.26	20.00	10.00	30.00	23.45	25.13	33.9	64.2	19.3	16.1	11.2	44.1	0.1	44.2
														64.6	19.4	16.2	11.1			
2525, 2526	27.8	138.5	40.00	20.00	60.00	46.90	50.26	20.00	10.00	30.00	23.45	25.13	33.9	64.6	19.4	16.2	11.1	44.3	0.1	44.4
														64.6	19.4	16.2	11.1			
2527, 2528	27.0	137.0	33.22	33.22	66.44	52.16	50.26	16.61	16.61	33.22	26.07	25.13	50.6	63.0	18.9	15.8	12.1	44.0	0.1	44.1
														63.0	18.9	15.8	12.0			

	Interpolated Test-Beater Strength Data on Unbleached Pulp at 72° F. and 65% Relative Humidity							Bleach Requirement	Ives Color Readings			Chemical Analysis: Cellulose				
Digestion No.	Freeness S. R., ml.	Time of treatment, min.	Bursting strength, pt. per lb. per ream	Tear (Elmendorf) pt. per lb. per ream	Folding endurance, double folds	Tensile strength, lb. per sq. in.	Solid fraction, ratio	Standard bleach added, %	Red, parts	Green, parts	Blue, parts	Total, %	Alpha, %	Lignin, %	Total pentosans, %	Chlorine number (Roe), %
2514, 2515	870	0	0.34	2.7	9	1590	0.28	0	46	36	32	96.6	82.5	2.4	6.4	2.8
	800	28	0.90	3.1	1320	5300	0.40	20	85	80	73					
	750	37	0.98	2.8	1440	6300	0.44	25	90	85	80					
	700	45	1.05	2.6	1480	7000	0.46	30	93	87	84					
	650	51	1.09	2.4	1480	7590	0.48									
	600	56	1.10	2.2	1440	7850	0.49									
	550	61	1.10	2.0	1360	8200	0.50									
2525, 2526	870	0	0.32	2.9	26	1520	0.28	0	46	36	30	95.2	79.6	2.6	5.3	2.5
	800	28	0.88	2.6	960	5400	0.40	20	87	80	74					
	750	37	0.94	2.4	1000	6100	0.43	25	89	86	81					
	700	45	0.99	2.2	1020	6700	0.45	30	92	89	86					
	650	51	1.04	2.1	1040	7200	0.46									
	600	56	1.08	2.0	1040	7600	0.47									
	550	61	1.11	1.8	1060	8000	0.49									
2527, 2528	865	0	0.31	2.7	11	1407	0.27	0	45	35	29	96.4	81.1	1.5	6.3	2.7
	800	26	0.86	3.0	840	5100	0.40	20	87	82	76					
	750	35	0.92	2.7	960	5700	0.42	25	88	84	82					
	700	42	0.96	2.5	1000	6300	0.44	30	90	88	85					
	650	48	0.99	2.4	1040	6800	0.45									
	600	54	1.02	2.2	1080	7200	0.47									
	550	65	1.06	2.1	1080	7700	0.48									

[1] The cooking conditions other than those shown are as follows:
Weight of moisture-free wood charged .... = 100 pounds
Volume of cooking liquor (including moisture in chips) charged = 60 gallons
Maximum digestion temperature .... = 170° C.
Temperature pressure increase period .... = 2 hours
Duration at maximum temperature .... = 1.5 hours

TABLE VI.—PROCESSING AND PAPER MACHINE DATA ON DOUGLAS FIR SULPHATE PULPS

Designation				Furnish: Pulp		Furnish: Other Material [1]			Beater and Jordan Data				Jordan Treatment	
Machine Run No.	Digestion No.	Bleach Run No.	Paper Grade, name	Original, %	Broke, %	Titanium dioxide filler, %	Rosin size, %	Dye added, name	Beater run No.	Consistency, %	Time in beater, min.	Jordan run No.	Plug speed, r.p.m.	Gage pressure, lb. per sq. in.
1603	2514, 2515	520, 521	Bond	100	....	2.0	1.50	violet, green	1205, 1206	2.3	30	462, 463	600	15
1646	2525, 2526	554, 555	Bond	100	....	2.0	1.50	violet	1246	2.5	30	501	400	20
1649	2527, 2528	556, 557	Bond	100	....	2.0	.75	violet	1247	2.5	30	504	560	30
1650	2527, 2528	556, 557	Bond	...	100 M.R. 1649	0.5	.50	....	....	..	..	505	600	15

	Physical Properties of Machine-Made Papers: Tests Made at 72° F. and 65% Relative Humidity												Ives Color Readings		
Machine Run No.	Ream weight 25×40—500, lb.	Thickness, 0.001 in.	Solid fraction, ratio	Burst, points	Tear (Elmendorf), points	Folding endurance, double folds	Tensile strength, lb. per sq. in.	Porosity, sec.	Opacity	Size number	Gloss, %	Ash, %	Red, parts	Green, parts	Blue, parts
1603	49.8	3.35	0.55	0.40	1.08	44	5135	201	83.0	1.70	39.0	..	84	81	88
1646	50.6	3.45	0.54	0.33	0.60	5	4985	189	83.0	1.52	33.0	2.1	88	87	89
1649	52.6	3.50	0.56	0.46	1.02	68	5415	234	80.2	1.58	30.9	..	91	91	90
1650	55.1	3.68	0.55	0.31	0.98	18	4230	265	85.7	1.32	29.6	..	93	93	91

[1] Final pH adjusted to 4.5 with alum before going on paper machine.

TABLE III.—BLEACHING DATA ON DOUGLAS FIR SULPHATE PULPS

Digestion No.	Bleach No.	Stage No.	Chemical Applied: Name	Chemical Applied: On weight of moisture-free pulp, %	Temperature, °C.	Reaction time, hours	Amount of chlorine consumed, %	Total chlorine consumed on pulp, %	Pulp suspension, pH	Bleached Pulp Characteristics: Alpha-cellulose, %	Ash content, %	Ives Color Readings: Red, parts	Green, parts	Blue, parts	Test Beater Strength Data on Bleached Pulps (Tests Made at 72° F. and 65% Relative Humidity): Time of treatment, min.	Freeness, ml.	Bursting strength, pt. per lb. per ream	Tear (Elmendorf), pt. per lb. per ream	Folding endurance, double folds	Tensile strength, lbs. per sq. in.	Solid fraction, ratio	Ream weight 25×40—500, pounds	Pulps used for machine run, No.
2514 } 2515 }	520	1	Cl+NaOH [1]	7.00	20	½+2	7.00		(2)						0	870	0.47	3.8	94	1975	0.30	57.2	
		2	NaOH	2.00	52	2	...								10	860	0.67	2.8	281	2810	0.36	55.1	
		3	$Ca(OCl)_2$	.55	40	3	0.55		(2)			90	88	83	20	840	0.81	2.3	972	4200	0.39	58.1	1603
		4	$Ca(OCl)_2$	.35	39	3½	0.35		(2)			91	90	87	30	810	0.92	1.9	830	4750	0.40	55.1	
		5	SO_2	...	23	1	...	7.90	6.0	89.7	0.4	90	88	86	50	690	1.00	1.6	903	6360	0.46	55.9	
2514 } 2515 }	521	1	Cl+NaOH [1]	7.00	20	½+2¼	7.00		(2)						0	870	0.44	1.7	27	2460	0.32	60.0	
		2	NaOH	2.00	49	2	...								10	850	0.61	1.1	28	3830	0.38	54.3	
		3	$Ca(OCl)_2$	.55	41	2	0.55		(2)			88	87	83	20	820	0.60	0.9	28	3770	0.42	54.8	1603
		4	$Ca(OCl)_2$	.35	40	3	0.35		(2)			90	89	87	30	755	8.63	0.9	22	4450	0.45	54.0	
		5	SO_2	...	20	1	...	7.90	6.0	82.8	0.4	91	91	89	50	595	0.60	0.7	29	5440	0.49	53.2	
2525 } 2526 }	554	1	Cl+NaOH [1]	7.00	19	⅓+2⅓	6.86		(2)						0	850	0.39	1.9	28	2080	0.31	53.2	
		2	NaOH	2.00	50	2	...					82	73	65	10	830	0.60	1.2	52	3850	0.38	52.4	1646
		3	$Ca(OCl)_2$	1.10	42	3	0.94		(2)			91	89	86	20	750	0.62	1.0	35	4910	0.43	57.5	
		4	SO_2	...	22	1	...	7.80	6.0	83.4	0.9	91	90	86	30	620	0.63	0.9	43	5700	0.49	57.2	
2525 } 2526 }	555	1	Cl+NaOH [1]	6.51	23	½+¼	6.48		(2)						0	870	0.43	1.7	12	2220	0.30	63.9	
		2	NaOH	2.00	50	2	...		..			79	71	61	10	810	0.58	0.9	14	4140	0.39	53.4	1646
		3	$Ca(OCl)_2$	2.20	41	1	1.37		(2)			92	89	86	20	640	0.62	0.8	13	5075	0.45	53.2	
		4	SO_2	...	23	1	...	7.85	6.0	79.4	0.4	92	90	88	30	460	0.61	0.6	13	6140	0.51	52.0	
2527 } 2528 }	556	1	Cl+NaOH [1]	7.20	19	½+3⅗	6.37		(2)			83	76	69	0	860	0.40	2.9	12	1550	0.28	57.0	
		2	NaOH	2.00	52	2	...		..			82	74	66	10	850	0.63	2.2	105	2900	0.33	60.3	
		3	$Ca(OCl)_2$	.70	40	2	0.61		(2)			89	87	86	20	830	0.78	1.7	437	3980	0.41	50.4	1649, 1650
		4	SO_2	...	21	1	...	6.98	6.0	89.2	0.2	91	89	88	30	775	0.83	1.6	395	5490	0.42	53.2	
															50	580	0.92	1.2	363	6800	0.46	58.6	
2527 } 2528 }	557	1	Cl+NaOH [1]	6.51	18	¼+3¼	5.87		(2)			81	73	65	0	870	0.39	3.2	13	1950	0.30	57.8	
		2	NaOH	2.00	50	2	...		..			82	74	64	10	860	0.65	2.5	149	3765	0.37	52.4	
		3	$Ca(OCl)_2$	.70	40	2	0.62		(2)			91	89	87	20	830	0.75	1.9	771	4850	0.42	54.3	1649, 1650
		4	$Ca(OCl)_2$	.20	42	2	0.18		(2)			92	91	88	30	770	0.83	1.7	671	6060	0.45	52.9	
		5	SO_2	...	20	1	...	6.67	6.0	89.2	0.2	91	89	88	50	580	0.93	1.4	658	6950	0.51	58.6	

[1] Sodium hydroxide was added after chlorination.
[2] Alkalinity adjusted by the use of sodium hydroxide until a faint pink color was obtained with phenolphthalein indicator.

of Douglas fir. The wood throughout the tree may be characterized by the uniformity in growth rate and in its contents of total and alpha-cellulose, and lignin, while other factors, such as density and content of heartwood, springwood, and pentosans, showed usual variation.

Pulping

All digestions were made in a steam-jacketed, tumbling digester of 14 cubic feet capacity. Duplicate digestions were made for each set of cooking conditions in order to obtain sufficient pulp for testing and for subsequent bleaching experiments. Instead of individual yield determinations on each of the duplicate digestions, the two similarly cooked pulps were mixed in a stock chest. The mixed pulps were then screened and run over a wet machine. Average yields of screened pulp and screenings were, therefore, obtained from samples of the mixture. Representative samples of the screened pulp were taken for beater strength, bleach requirement, and chemical tests.

Indirect steam heating was used in all the digestions, employing a straight-line temperature increase period of 2 hours to go from that of the room to the maximum temperature of 170° C. This temperature was maintained for a period of 1.5 hours. The equivalent of 100 pounds of moisture-free wood and a volume of 60 gallons of cooking liquor (including the moisture in the chips) were used for each digestion.

Each of the first four digestions was made with a cooking liquor having 30% of total chemicals based on the weight of the moisture-free wood and a total chemical concentration of 60 grams per liter. Since the chemicals used were in the ratio of 2 parts of sodium hydroxide to 1 part of sodium sulphide, the amounts used per 100 pounds of moisture-free wood equaled 20 pounds and 10 pounds, respectively. These quantities are equivalent to an effective (free) alkali content in the cooking liquor of 25.13%, a sodium oxide content of 23.45%, and a sulphidity of 33.9%.

In the last two digestions the sulphidity of the cooking liquor was increased to 50.6%. This was accomplished by changing the proportions of sodium hydroxide to sodium sulphide to a ratio of 1 to 1, and at the same time maintaining the effective alkali in the cooking liquor at the same point (25.13%) as that of the previous digestions. Under these conditions, the total chemicals amounted to 33.22% of the weight of the moisture-free wood which is equivalent to a sodium oxide content of 26.07%. Since there was no change in volume, the total chemical concentration in the cooking liquor was increased to 66.44 grams per liter.

The cooking, yield, interpolated beater strength, bleach requirement, and chemical data are given in Table II.

Results of Pulping

The Douglas fir pulpwood, when cooked with 30% of its moisture-free weight of chemical, produced a pulp of good yield (44.1%) and purity. According to the chemical analysis and bleach-requirement tests, the pulp was apparently suitable for bleaching purposes. For example, the data (Table II) on the unbleached pulp from the mixture of the first two digestions (2514 and 2515) show a lignin content of 2.4% and a Roe chlorine number of 2.8%. When the unbleached pulp was treated with 30% of bleach in a single-stage bleaching test, an Ives blue color reading of 84 was obtained. This value is somewhat lower than would be expected from most species with the same lignin content and Roe number. Even though this test indicated that the pulp had only medium bleaching qualities, it was safe to assume from past experience that the use of multistage bleaching methods would result in some reduction in the bleach required and also in an improvement in the color of the bleached pulp. The results of the beater test on the unbleached pulp show adequate strength properties including very good tearing qualities.

Two additional digestions (2525 and 2526) were made under the same cooking conditions. The chemicals consumed during the cooking operation and the yield of screened pulp and screenings were almost exactly the same as those obtained in the first pair of identical digestions. The strength of the pulp from the additional digestions (2525 and 2526) was somewhat lower, however, especially in tearing and folding strength, than that obtained from the previous digestions. Except for a 3% lower alpha-cellulose content, the values obtained from chemical analysis of the pulp were about the same as those for the first pair of digestions. A slight improvement in bleaching properties was indicated for this pulp, where 30% bleach gave an Ives blue reading of 86 as compared with 84. These differences indicated the spread in values that were obtained from four duplicate digestions.

In order to determine the effect of sulphidity of the cooking liquor on a bleachable Douglas fir pulp, an additional pair of digestions (2527 and 2528) were made at a sulphidity of 50.6% instead of 33.9% as previously described. Incidentally, this change *(2)* accompanied by slight increases both in the amount and concentration of chemicals in the cooking liquor would tend to result in a slightly easier bleaching pulp than those made at the lower sulphidity. Even under these favorable conditions there was only a very little improvement in the bleaching properties of the higher sulphidity pulp. The only real indications of this improvement were the 1% lower lignin content (1.5 compared with 2.5% and the slightly lower permanganate number, 14.5 compared 15.7) of the unbleached high sulphidity pulp. Other chemical tests indicated nearly the same values for both pulps. In most instances the values obtained from the high sulphidity pulp fell between the values obtained from the two duplicate pulps made at 33.9% sulphidity. In comparing the average strength values of the two pulps, the one cooked at a higher sulphidity had equal tearing strength and solid fraction values and had a little lower bursting and tensile strength, and folding endurance, than those cooked at the lower sulphidity. The greatest variation in strength was in folding properties. Both types of pulp, however, appeared to have sufficiently high strength properties, especially tearing strength, to be considered suitable after processing for the production of strong white paper.

Bleaching

Thirty-five pound batches of the pulp from a mixture of each pair of digestions were bleached at 2% consistence in a 250-gallon vertical wood tank provided with an inner draft tube and a motor-driven impeller. Chlorine was admitted to the tank by means of an Aloxite dispersion unit connected with a chlorine tank. After each treatment the pulp was removed from the bleacher and washed with hot water in a wood screen box.

The bleaching procedure was essentially that of the four- or five-stage Hooker bleaching method *(3, 4, 5)* modified only to the extent necessary for the equip-

ment at hand. For example, the main modification of the Hooker method was that 15 to 30 minutes were required to add the chlorine gas whereas only 5 minutes are recommended for this purpose.

The first stage of the Hooker bleaching method consists of the addition of elemental chlorine in an amount substantially greater than that which can be consumed by the pulp during this period. Alkali is then added to shift the pH abruptly to a value in excess of 8. The resulting alkaline hypochlorite is allowed to become practically exhausted in the subsequent retention period. The second-stage of this method consists of an extraction with caustic soda at an elevated temperature. Calcium hypochlorite is then added in either one or two stages. The final stage consists of a 1-hour retention period after the hydrogen-ion concentration has been adjusted by the addition of sulphur dioxide gas to a pH of 6.

In these experiments the first stage of the bleaching operation consisted of a chlorination of the pulp at about 20° C., adding if possible at least 90% of the total chlorine requirement of the pulp as elemental chlorine. Instead of allowing the chlorine to exhaust at a pH below 2, caustic soda was added immediately to adjust the pH to 8.5 or 9. Sufficient additional caustic soda was added from time to time to maintain this hydrogen-ion concentration. The pulp was washed with hot water between all stages. The second stage consisted of a 2-hour extraction with 2% sodium hydroxide, while the temperature was raised from 50° to 70° C. In the third stage the pulp was treated with calcium hypochlorite bleach liquor at 40° C. Unless an Ives blue reading of at least 86 was attained, an additional treatment with a small amount of hypochlorite was given the pulp as a fourth stage. Finally, to reduce the ash content of the pulp and to retard color reversion, sulphur dioxide gas was added until the pH of the pulp suspension reached 6. After an hour the pulp was allowed to drain without washing in a box provided with an Aloxite bottom.

Small-scale Bleaching

A number of small-scale bleaching tests were made to determine the chlorine requirement for both the chlorination stage and the subsequent bleaching stages. For the chlorination stage, the pulps were chlorinated with varying amounts of chlorine and then bleached with the same amount of calcium hypochlorite, and, for the bleaching stages, samples of the pulp were treated with a predetermined amount of chlorine and bleached with varying amounts of calcium hypochlorite. In each case the final color of the bleached pulp was determined with the Ives tint photometer. In these tests, samples equivalent to 20 grams of moisture-free pulp were treated at 2% consistence with a measured amount of chlorine water. After stirring rapidly for exactly 5 minutes, caustic soda was added until a pink color was observed with phenolphthalein indicator. The pulp was allowed to remain at room temperature until the active chlorine was exhausted. Additional caustic soda was added if necessary during this period to keep the pulp alkaline. At the end of this bleaching period, the pulp was washed with hot water and extracted with sodium hydroxide solution equivalent to 2% of the weight of the original moisture-free pulp. At 2% consistency, the extraction treatment was continued for 2 hours at 60° C. After washing, the extracted pulp was divided into two equal parts. Each part was then treated with a definite amount of calcium hypochlorite solution. The pulp suspension of 1% consistence was maintained at a temperature of 40° C. in a hot water bath until the chlorine was exhausted. During this bleaching period an alkaline condition was maintained by the addition of a small amount of sodium hydroxide. After washing with hot water and adjusting the pH of the suspension to 6 with sulphur dioxide water the pulp was allowed to remain for 1 hour at room temperature at 1% consistency. The bleached pulp was then made into a thick handsheet for color analysis. In some instances a second calcium hypochlorite treatment followed by a hot water wash was given the pulp before acidification with sulphur dioxide.

The data on the small-scale bleaching are given in Table IV.

Results of the Small-scale Bleaches

The small-scale multistage bleaches on the pulp from digestions 2514 and 2515 showed that, when

TABLE IV.—PRELIMINARY BLEACHES ON DOUGLAS FIR SULPHATE PULPS

Pulp Used		Bleach Sample No.	Chlorine Applied (as Chlorine Water) Based on Pulp Stage 1 %	Chlorine Consumed Based on Pulp Stage 1 %	Extraction with 2% NaOH, Stage 2	Chlorine Used (as Hypochlorite) Based on Pulp, Stage 3 [4] %	Chlorine Used (as Hypochlorite) Based on Pulp, Stage 4 [4] %	Total Chlorine Consumed Based on Pulp, %	Ives Color Readings		
Cook No.	NaOH to Na_2S (Sulphidity) Ratio								Red, Parts	Green, Parts	Blue, Parts
.....	...	1	6.0	6.00	[1]	0.90	...	**6.90**	**90**	87	82
.....	...	2	6.0	6.00	[1]	0.55	0.35	6.90	90	87	81
2514+2515	2:1	3	7.0	7.00	[1]	0.90	...	7.90	89	87	83
.....	...	4	7.0	7.00	[1]	0.55	0.35	7.90	88	85	80
.....	...	5	8.0	7.60	[1]	0.90	...	8.50	89	86	84
.....	...	6	8.0	7.60	[1]	0.55	0.35	8.50	86	84	79
.....	...	7	7.0	6.65	...	...	...	6.65	82	77	66
.....	...	8	7.0	6.65	[1]	...	...	6.65	82	72	64
.....	...	9	7.0	6.65	[2]	0.90	...	7.55	..	..	**86**
2514+2515	2:1	10	7.0	6.65	[2]	0.55	0.35	7.55	..	..	85
.....	...	11	7.0	6.65	[1]	0.90	...	7.55	..	..	85
.....	...	12	7.0	6.65	[1]	0.55	...	7.20	..	..	**82**
.....	...	14	7.0	6.65	[1]	0.90	...	7.55	..	..	85
.....	...	13	7.0	6.65	[1]	0.55	0.35	7.55	..	..	83
2525+2526	2:1	20	5.0	5.00	[3]	0.90	...	5.90	85	83	77
2527+2528	1:1	21	5.0	5.00	[3]	0.90	...	5.90	87	85	79
2525+2526	2:1	28	6.0	6.00	[3]	0.90	...	6.90	89	87	82
2527+2528	1:1	23	6.0	6.00	[3]	0.90	...	6.90	90	**88**	**84**
2525+2526	2:1	24	7.0	7.00	[3]	0.90	...	7.90	89	88	84
2527+2528	1:1	25	7.0	7.00	[3]	0.90	...	7.90	89	88	84
2525+2526	2:1	26	5.0	5.00	[3]	1.90	...	6.90	91	87	83
2527+2528	1:1	27	5.0	5.00	[3]	1.90	...	6.90	91	88	84

[1] 2 hours at 60° C.
[2] 2 hours at 60° C.
½ hour at 60-70° C.
½ hour at 70° C.

[3] ½ hour at 40-60° C.
1 hour at 60-70° C.
[4] Consistency 1% for all bleaches except for sample 10 which was 2%.

the same amount of chlorine was consumed, one hypochlorite bleaching stage gave a better color than two hypochlorite stages. As shown in samples 1 to 6 of Table IV, this relationship held true where the amount of total chlorine was varied to give total chlorine consumptions of 6.9, 7.9, and 8.5%. In samples 2, 4, and 6 where two hypochlorite bleaching stages were used, the Ives blue reading of the bleach pulp decreased as the total chlorine consumptions increased. When one hypochlorite bleaching stage was used (samples 1, 3, and 5) the opposite was true and the blue reading increased from 82 to 84 with an increase in total chlorine consumptions. Even though the chlorine consumption (7.9%) was the same, in sample 4, (Table IV) as it was for the large-scale bleach 520, (see Table 3) the whiteness was decidedly lower (80 compared with 87 parts blue). The most plausible explanation for this difference is the length of time that the chlorine was in contact with the two pulps. In the large bleach 520, 30 minutes were required to add the chlorine previous to adding the alkali, whereas in the small bleach only 5 minutes, (recommended by the Hooker method), had elapsed before adding the alkali. This shorter chlorination period probably resulted in less chlorine consumption as elemental chlorine than when the same percentage of chlorine was added over the longer period. When chlorine water is neutralized with caustic soda, one-half of the chlorine is converted to sodium hypochlorite and the other half to inactive sodium chloride. Although the oxidizing power of the solution is the same, the formation of a larger quantity of sodium chloride from the unconsumed chlorine in the small-scale bleach would result in a decrease in the amount of chlorine that would otherwise be available for chlorination.

For another series of small bleaches, 100 grams of pulp were bleached with 6.65% chlorine in the first stage and extracted with 2% sodium hydroxide for 2 hours at 60° C. in the second stage. This extracted pulp was divided into 10-gram samples for subsequent treatments (samples 8 to 14, inclusive, Table IV). The extracted pulp was darker in color than before the extraction. The blue color readings were 66 and 64, respectively, for samples 7 and 8, Table IV. A little better color was obtained in a three-stage bleach when an additional extraction at 70° C. was used than when the pulp was bleached without this treatment (samples 9 and 14, Table IV). Two four-stage bleaches (samples 10 and 13, Table IV), showed the same trend in results where one was given the additional extraction at the higher temperature. The limited effectiveness of the second hypochlorite treatment may be seen by a comparison of samples 13 and 12. The four-stage bleaching of the former gave a blue color reading of 83. This color was obtained, after chlorination and extraction, by using the equivalent of 0.55% chlorine in the third stage and 0.35 chlorine in the fourth. The pulp from sample 12 was similarly bleached except that three stages were employed and the color read at the end of the third stage. This pulp gave a blue color reading of 82, therefore the difference between the two color readings, or 1 part blue, indicates a very limited bleaching action in the fourth stage with the equivalent of 0.35% chlorine. An additional group of small bleaches was made to compare the ease of bleaching between pulps cooked with liquors of two different degrees of sulphidity, 34 and 50.6%, respectively. Each of these pulps was bleached in three stages using 5.9, 6.9 and 7.9% total chlorine, respectively. For equal amounts of chlorine, the 50% sulphidity bleached pulps using 5.9 and 6.9% total chlorine were lighter in color than those cooked with liquors of 34% sulphidity. With 7.9% chlorine the color of the bleached pulps was identical for both pulps. As the percentage of chlorine was increased in bleaching, the pulp made at 34% sulphidity became lighter in color. The pulp made at 50% sulphidity, however, became much lighter in color when the percentage of total chlorine was increased from 5.9 to 6.9 but no further changes occurred when the total chlorine was further increased to 7.9%. On the attainment of the maximum color with a lower percentage of total chlorine, the high sulphidity pulp (50%) would be rated as easier to bleach than the 34% sulphidity pulp, as the latter required a larger amount of chlorine for the same degree of whiteness.

On samples 28 and 26 (Table IV) the same total chlorine consumption of 6.9% was obtained by two different chlorine partitions. For sample 28, 6.0% chlorine was added in the first-stage as chlorine water and 0.9% chlorine was used in the third-stage as calcium hypochlorite. A blue color reading of 82 was obtained by this procedure. A little higher blue color reading of 83 was obtained for sample 22 where 5.0% chlorine was added in the first stage as chlorine water and 1.9% chlorine was consumed in the third stage as hypochlorite. No significance, however, can be attributed to this small difference in color as no difference was obtained between two samples of a different pulp (23 and 27) where the same procedure was followed.

Large-scale Bleaching

The mixed pulp from digestions 2514 and 2515 was bleached with 7.90% total chlorine in two separate batches (bleach 520 and 521) of five stages each as shown in Table III.

Bleach 520 produced a bleached pulp of good strength and color. A total time of 12 hours, which was divided among the several stages, was required. In the first stage ½-hour was allowed to add 7% of the weight of the pulp as chlorine gas. An additional 2 hours was taken to add the alkali and exhaust the chlorine. In the second stage the pulp was extracted for 2 hours with 2% of its weight of sodium hydroxide. During this extraction, the temperature was raised from 52° to 70° C. In the third stage 0.55% chlorine in the form of calcium hypochlorite was allowed to react with the pulp for 3 hours or until the chlorine was practically exhausted. At the end of this third stage, the whiteness of the bleached pulp, as measured by the Ives blue reading, was 83. A second hypochlorite treatment equivalent to 0.35% chlorine as a fourth stage required 3.5 hours. At the end of this stage the color of the pulp was 87 parts blue.

A 1-hour retention period after the sulphur dioxide treatment in the fifth and final stage resulted in a slight decrease in the whiteness of the pulp. However, the final color was very satisfactory as shown by the Ives color readings of 90 parts red, 88 parts green, and 86 parts blue.

TABLE V.—DATA ON SMALL BLEACHES OF PARTIALLY BLEACHED PULP FROM BLEACH 556

Sample No.	Chlorine (Applied as Bleach Liquor) Based on Pulp, %	Time of Bleaching, hours	Chlorine Consumed Based on Amount of Chlorine Applied, %	Chlorine Consumed Based on Pulp, %	Chlorine Remaining (Unconsumed) Based on Pulp, %	Ives Blue Reading—Whiteness, parts
15	0.50	2	92.9	0.4645	0.0355	86.3
16	0.70	2	91.9	0.6432	0.0568	86.9
17	0.70	4	100.0	0.7000	0.0000	87.5
18	0.90	2	91.7	0.8254	0.0746	87.0

A sample of the bleached pulp from bleach 520, when treated in a test beater for 20 minutes, had bursting and tearing strengths of 0.81 and 2.3 points, respectively. With 30 minutes beating, the corresponding values were 0.92 and 1.9 points. At the 20-minute interval the folding endurance was 972 double folds as compared with 830 double folds for the 30 minute beating period. These results indicated that the bleached pulp was strong enough to produce a white paper with high strength qualities.

Bleach 521 was made as a duplicate of bleach 520. The bleached pulp from the first, however, was higher in color but decidedly lower both in alpha-cellulose content (7%) and in strength, especially folding endurance. Bleach 521 was evidently over-bleached. This difference is especially difficult to explain, as the unbleached pulp in both cases was treated with the same amount of chlorine and the bleached pulp had the same blue color (87) reading at the end of the fourth bleaching stage. There was a difference, however, in the time required for the several bleaching operations. Bleach 521 required ¼ hour longer for the chlorine to exhaust in the first stage, 1 hour less in the third stage, and ½ hour less in the fourth stage, than did bleach 520 with total bleaching periods of 12 and 10-¾ hours, respectively.

Since the result of several small-scale bleaches indicated that, when the same amount of total chlorine was added, a one-stage hypochlorite treatment after alkaline extraction produced just as good a color as two hypochlorite stages, only one hypochlorite stage was used for digestions 2525 and 2526. (See bleaches 554 and 555, Table III). A mixture of the pulp from these digestions was bleached in two batches of four stages each, with an approximate total chlorine consumption of 7.8%.

In order to avoid possible degradation of the pulp by contact with the spent liquor after the active chlorine had been consumed, the bleached pulps were dumped shortly before the chlorine was exhausted.

Bleach 554 resulted in a bleached pulp acceptable in color (blue reading 86) but low in alpha-cellulose content and in strength. Except for a slightly darker color, the test data obtained from this pulp were almost the same as those from bleach 521.

In bleach 555, a smaller quantity of chlorine gas was added in the first stage while double the percentage of chlorine was added in the hypochlorite stage than was used in the previous bleach (554). Owing to these changes, the same quantity of total chlorine was consumed in 3.75 hours less time. It should be noted that this reduction in time was almost equally divided between the chlorination and the hypochlorite stages. The bleached pulp from bleach 555 showed no improvement in strength properties over those of the previous bleach. There was a slight improvement in color, but the alpha-cellulose content showed a reduction of 4%. In this case, a chlorine partition planned to give a definite chlorine consumption in a shorter bleaching time resulted in less desirable pulp qualities except color.

Bleaches 556 and 557 were made on the pulp from digestions 2527 and 2528 which were cooked with a liquor of high sulphidity (50.6%) as compared with the other pulps made with a liquor of 33.9% sulphidity.

In bleach 556 a good color was obtained by a four-stage treatment where 7.9% total chlorine was applied and 7.0% total chlorine was consumed. This is the same amount of chlorine that was applied in bleach 520 but in that bleach it was necessary to consume practically all the chlorine to obtain a satisfactory whiteness of the pulp. The lower chlorine consumption for bleach 556 indicates an improvement in the bleaching properties of this high sulphidity pulp. The extraction with sodium hydroxide in bleach 556 reduced the blue color reading from 69 to 66 (Table III). The same trend was also shown in bleach 557 but the darkening of the pulp (decrease in blue color) was not so marked (65 to 64 parts blue).

Four small bleaches were made on the extracted pulp from bleach 556 to assist in determining the quantity of bleach liquor necessary for the third or hypochlorite stage. Pulp samples were bleached for 2 hours with calcium hypochlorite bleach liquor equivalent to 0.5, 0.7, and 0.9% chlorine based on the moisture-free weight of the pulp. An additional sample using 0.7% chlorine was bleached for 4 hours.

For the same bleaching time, the data on these small bleaches (Table V) showed a slight increase in the blue color reading (from 86.3 to 86.9 parts) as the chlorine added was increased from 0.5 to 0.7%. A further increase in the chlorine to 0.9%, however, caused no change in the blue color reading. When the bleaching time with 0.7% chlorine was doubled to 4 hours, the color was increased by only 0.6 parts blue. As the percentage of chlorine applied was increased, both the percentage of consumed and unconsumed chlorine was increased. Since no increase in color was obtained, (without increasing the bleaching time) by the larger quantity of chlorine, the equivalent of 0.7% chlorine was applied in the third stage of bleach 556.

The pulp from bleach 556 had a high alpha-cellulose content (89.2%) and a low ash content (0.2%). A bleached pulp of fairly good strength properties including excellent tensile strength was obtained.

In bleach 557 five stages were used to produce a pulp of excellent color (Ives blue reading 88 parts) and purity. Satisfactory strength properties were obtained which were outstanding only in tensile strength. Other strength properties approached, but were a little lower than these obtained in bleach 520. Even though the 33.9 sulphidity pulp from bleach 520 was rated the best of any of the bleached pulps due to superior strength qualities, the bleached pulp from bleach 557 approached this rating because of its better color, tensile strength, and lower chlorine requirements.

Any comparison between the bleaches on pulps cooked at different sulphidities must be of a general nature since the bleaching conditions for the two pulps were not exactly the same. The high sulphidity pulps (50.6%) seemed to bleach slightly easier than the pulps cooked with the usual sulphidity (33.9%). One indication of this was a less rapid chlorine consumption in the first bleaching stage. The color of the high sulphidity bleached pulp was very high in whiteness, requiring from 10 to 15% less chlorine than the low sulphidity pulp. The strength properties of the high sulphidity pulps were better than those of the low sulphidity pulps with the exception of bleach 520 which was superior in all strength qualities except tensile strength. A high chemical purity in certain bleached pulps from both sulphidities was indicated by their high alpha-cellulose contents (89 to 90%) and low ash contents (0.2 to 0.4%). The strength values of these bleached pulps seemed to be sufficiently high for use in white papers requiring high strength properties.

Paper Machine Trials

Bond papers of a high degree of whiteness and excellent formation, porosity, and gloss, as shown in Table VI, were made from the bleached pulps. The strength properties of the bleached pulps indicate that considerably stronger papers of this type could be made under optimum processing conditions.

The best strength qualities were obtained in the paper from machine run 1603 made from bleaches 520 and 521 and from machine run 1649 made from bleaches 556 and 557. An improved sheet formation but lower bursting and folding qualities resulted from using the broke from machine run 1649 to make machine run 1650.

Conclusions

Unbleached sulphate pulps of medium bleach requirements and good strength qualities were produced by treating rapid-growth Douglas fir with cooking liquors of 33.9 and 50.6% sulphidity. Bleachable pulps were thus obtained by the use of the same time and temperature conditions of pulping that are normally employed for the production of ordinary kraft pulps.

Multistage bleaching experiments involving different chlorine partitions give bleached pulps high in whiteness. The higher sulphidity pulp bleached slightly easier than the lower sulphidity pulp. A bleached pulp was obtained at each sulphidity that had a very good color, a fairly high alpha-cellulose content, a low ash content, and strength values that seemed to be sufficiently high for use in white papers requiring high strength properties.

Satisfactory bond papers of a high degree of whiteness and excellent formation, porosity, and gloss were made from the bleached Douglas fir sulphate pulps. The strength properties of the bleached pulps indicate that considerably stronger papers of this type could be made under optimum processing conditions.

Literature Cited

1. Martin and Bray, *Paper Trade J.* 117, No. 17: 29 (Sept. 16, 1943).
2. Bray, Martin, and Schwartz, *Paper Trade J.* 109, No. 17: 40 (Oct. 26, 1939).
3. Rue, John D., Transactions of the Electrochemical Society, Vol. 72 (1938).
4. Chilson, Warren A., *Paper Trade J.* 109, 25: 29-31 (Dec. 21, 1939).
5. Rue, John D., *Paper Trade J.* 110, No. 26: 98-101 (June 27, 1940).

Advances in Colloid Chemistry

Interscience Publishers, Inc., has announced that Vol. II of Advances in Colloid Chemistry is now ready. (453 pp. 6x9). This volume is edited by H. Mark of the Polytechnic Institute of Brooklyn and G. S. Whitby of the University of Akron, and deals with the scientific progress in the field of rubber and synthetic elastomers. The chapter are written by a number of well qualified authors.

Among the subjects covered are: Second Order Transition Effects in Rubber and Other High Polymers: Crystallization Phenomena in Natural and Synthetic Rubbers; The Kinetic Theory of Rubber Elasticity; Significance of Viscosity Measurements on Dilute Solutions of High Polymers; Rubber Photogels and Photovulcanizates; and Reinforcing and Other Properties of Compounding Ingredients. In accordance with the policy of Interscience Publishers this book is an authoritative text covering the scientific advances of the colloid fields.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y., at $7.00 per copy.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Nils Anderson, Jr., Vice-President, Casein Company of America, Division of the Bordon Co., 350 Madison Ave., New York, N. Y., a 1937 graduate of Williams College.

Fred W. Bishop, Assistant Chief Chemist, Southland Paper Mills, Inc., Herty, Texas, a 1937 graduate of the University of Mississippi.

Leonard S. Campbell, Chief Chemist, Gair Company (Canada) Ltd., Toronto, Ont., Canada, a 1935 graduate of Queens' University.

Clifford L. Cashion, Assistant Chemist, Champion Paper & Fibre Co., Houston, Texas. Attended North Texas State Teachers College.

Walter F. Coleman, Chemical Engineer, E. I. du Pont de Nemours & Co., Inc., Niagara Falls, New York, a 1942 graduate of Drexel Institute of Technology.

Harry J. Daubney, Manager, Mills Division, Gair Company (Canada) Ltd., Toronto, Ont., Canada. Attended McGill University.

Arthur L. deSpain, Chemical Engineer, General American Process Equipment, 420 Lexington Ave., New York, N. Y., a 1919 graduate of Westminster College.

Francis L. Fennell, Peroxygen Products Development, E. I. du Pont de Nemours & Co., Inc., Niagara Falls, New York. Attended the Univ. of Rochester.

Frederick H. Gayer, Director of Research, Continental Research Corp., Chicago Heights, Illinois, a 1920 graduate of the University of Budapest.

Welty C. Good, Chief Chemist, Johns-Manville Products Corp., Jarratt, Virginia, a 1933 graduate of the University of Richmond.

Samuel Guastella, Research Chemist, Fitchburg Paper Co., Fitchburg, Massachusetts, a 1942 graduate of Northeastern University.

Paul B. K'Burg, Chemist, E. I. du Pont de Nemours & Co., Inc., Niagara Falls, New York, a 1937 graduate of Ohio University.

Bernard Mechanic, Chemical Engineer, Sam Tour & Co., Inc., New York, N. Y., a 1941 graduate of the College of the City of New York.

Russell T. Mills, Peroxygen Products Development, E. I. du Pont de Nemours & Co., Niagara Falls, New York. Attended Tri-State College.

Robert G. Duark, Director of Sales Research, Corn Products Refining Company, Mellon Institute, Pittsburgh, Pennsylvania, a 1935 graduate of the University of Pittsburgh.

Thomas H. Smith, Chief Chemist, Southern Kraft Div., International Paper Co., Mobile, Alabama, a 1933 graduate of the University of Alabama.

Edgar L. Spruill, Jr., Chemical Engineer, Southern Advance Bag & Paper Co., Inc., Hodge, Louisiana, a 1938 graduate of Wake Forest College.

Kenneth W. Stroad, Assistant Superintendent, U. S. Bureau of Engraving and Printing, Washington, D. C. Attended George Washington University.

William E. Wegner, Research Chemist, Crown Zellerbach Corp., Camas, Washington, a 1937 graduate of State College of Washington.

Chi Shen Yung, Electrical Engineer, Sung Sing Cotton Mills, Shanghai, China, a 1936 graduate of Durham University (England).

L. Otis Green, Owner, Saturating Papers, and The National Varnished Products Corp., 1313 W. Randolph St., Chicago, Ill. Attended Northwestern U.

Week's Record of Trends in The Paper and Pulp Market

Office of the PAPER TRADE JOURNAL,
Wednesday, May 29, 1946.

Production of pulp, paper and paperboard continues at record levels, April output of paper and board reaching 1,633,000 tons, only 5,000 tons short of the post-war record high set in March. Consumption of fibrous materials also continues at high levels. Receipts of pulpwood at 1,463,000 cords were 253,000 cords below the March figure, resulting in a net inventory loss of 70,000 cords. Nevertheless, waste paper and other fibrous material were received in sufficient quantities to improve the inventory position. Wood pulp production at 897,000 tons was 18,000 tons below the record for March. Consumption reduced inventories 55,000 tons during the month according to the latest Bureau of the Census figures. This decrease was distributed evenly between the sulphite and sulphate grades of market pulp.

Increase in All Grades

Practically all grades of paper and paperboard show increases over the first quarter of 1945, the most notable gains being in book paper, folding boxboard, groundwood printing paper, special industrial and tissue papers. An indication of the greater movement of paper into consumer channels is evidenced by the fact that wholesale paper sales in the first quarter of 1946, on a value basis, were 13 percent higher than for the same period last year. Nevertheless, demand for paper products continues to exceed supply. In most industrial fields as well as in the food industries, demands for packaging papers and containers are growing. Printers and publishers continue to report inadequate supplies of printing papers to meet enlarged needs, and as we recently reported, a voluntary effort is being made to return to wartime basis weights and thereby spread the available tonnage. Paper mills are still allocating supplies to their customers though greater production has permitted them to increase allotments. It remains practically impossible for consumers to obtain paper from other than regular suppliers whether it be mills or distributors. The same situation prevails in the paper products field such as shipping containers, folding and set-up boxes and bags.

Diversion to Europe of the entire 32,000,000 bushels of corn recently purchased by the Department of Agriculture under the 30c bonus plan may curtail the output of industrial corn starches and thus seriously cut into the production of certain paper products. Paper products likely to be affected by such a critical corn starch shortage include such items as paper bags which are sized with corn starch to impart strength, containers, envelops, wrappers, cartons, boxes, stationery, magazines and books.

The index of general business activity for the week ended May 18 fell to 117.7 from 124.3 in the previous week, compared with 144.3 for the corresponding week in 1945. The index of paperboard production fell to 157.5 from 173.9 in the previous week, compared with 163.7 for the corresponding week in 1945.

Paper production for the week ended May 18 was estimated at 98.3 per cent, compared with 102.8 for the preceding week, with 92.5 for the corresponding week in 1945, with 90.7 for 1944, with 92.2 for 1943, and with 81.0 percent for the corresponding week in 1942.

Paperboard production for the week ended May 18 was 92.0 percent of capacity, compared with 97.0 percent for the preceding week, with 97.0 for the corresponding week in 1945, with 97.0 for 1944, with 96.0 for 1943, and with 81.0 percent for the corresponding week in 1942.

Wood Pulp

With reasonbly adequate pulpwood supplies domestic pulp production can be maintained. The important factor will be the supply of imported pulp. Current reports indicate that 550,000 short tons of Swedish pulp may be expected to arrive in the United States during the remainder of this year. Thus, there is the possibility that 1946 receipts from Sweden may reach 800,000 tons after all. Coupled with increased shipments of pulp from Finland the situation leaves considerable cause for optimism about wood pulp supplies for domestic paper mills during the remainder of 1946.

Rags

Mill demand for cotton cuttings is active. The relatively limited supply situation has created a strong market. Prices are strong at ceiling levels.

Trading in old cotton rags is active at this date. Nearly all grades are in relatively heavy demand. Roofing grades continue in heavy demand with prices firm at ceiling levels.

Old Rope and Bagging

Mill demand for good Manila rope continues heavy. Other strong fibers are in good demand. Prices are firm and unchanged.

Dealers report it is difficult for them to buy No. 1 mill run bagging, or No. 1 gunny at 3.75c a pound at point of shipment because packers are not satisfied with this price. Thus, the bagging market is held up somewhat by the lack of supplies available at prices buyers are likely to bid.

Waste Paper

Market as a whole reported improving, and over-all demand sufficient to take up stocks offered. Prices steady at ceiling levels in all but exceptional cases.

There appears only a slight probability of any immediate change in the waste paper regulation as pertaining to the $5 per ton premium on bales of 500 pounds or more.

New Towmotor Features Side-Mounted Motor

A new addition to the "one-man-gang" lift trucks made by Towmotor Corporation, Cleveland, is the sturdy yet compact Model LT-35 which makes its debut with a side-mounted motor engineered to cut wheelbase length to 35 inches. Placement of the motor on the side—and Towmotor claims a first for this innovation—reduces overall length without sacrifice of strength. Lifting and tilting mechanisms are hydraulic; the same type proved through years of service in other Towmotor models.

The Model LT-35 weighs only 2800 pounds but will lift, carry and stack a 1500 or a 2000 pound load in areas previously inaccessible to lift truck operation such as tight aisleways, elevators and the crowded confines of highway trucks and freight cars. Its comparatively light weight also makes operation possible on 2-ton capacity elevators and in multi-story buildings with low to medium load limits.

Engine, transmission and axle units are easy to get at for maintenance inspections and adjustments, while quick removal of a side plate permits all electrical and carburetor adjustments. Clutch replacement can be accomplished without moving either the engine or the transmission.

Chemipulp Process Expands Its Consulting Services

WATERTOWN, N. Y.—The Chemipulp Process Inc., and its Canadian counterpart, the Chemipulp Process Ltd., of Montreal, in both of which Albert D. Merrill is president and Thomas L. Dunbar, chairman of the board, both of this city, plan expanded consultation and other services to meet post-war demand.

These expansion plans include increasing the boards of directors from three to four members, Attorney Roger C. Wright, resigning, and John F. Inderdohnen, of this city and Jack Grant, of Montreal, being added not only to the boards but to the list of principal stockholders.

Mr. Inderdohnen, who moved to this city March 21 from Milwaukee, became vice president of Chemipulp Process Inc., city, and secretary of Chemipulp Process Ltd. of Montreal, while Mr. Grant who is to take charge of the Montreal office of the latter becomes its vice president and is made secretary of the Chemipulp Process Inc.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, May 29, 1946.

BLANC FIXE—Market continues steady with prices firm and unchanged. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Demand is reported very active. Supply situation is reported favorable at this date. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 33 cents per pound; 2,000 pounds, 33¼ cents per pound; less than 2,000 pounds, 33¾ cents per pound, f.o.b. shipping point. Imported, 33 cents per pound.

CAUSTIC SODA—Current demand is very strong. Production large, but deliveries slow. Market tight. Supply of drums short. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 to $2.95 per 100 pounds.

CHINA CLAY—Increasing demand is reported. Quotations remain unchanged. Supply fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Heavy demand with most paper requirements being met. Quotations unchanged. Chlorine is currently quoted at $2.00 to $2.25 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—No offerings and sales. "G" gum rosin is quoted at $6.74 per 100 pounds, in barrels, at Savannah; "FF" rosin at $6.70 per 100 pounds in barrels, at New York; seventy percent gum rosin size at $6.95 per 100 pounds, f.o.b. works.

SALT CAKE—Quotations on salt cake are reported unchanged at this date. Current demand is reported firmer. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand continues for over-all requirements. Market remains tight with demand above output. Bulk lot shipments steady. Bagged lots still slow. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.95; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Corn market restricted due to small supply. Prices steady. Starch offerings scarce with prices unchanged. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand reported steady. Supply situation good. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.35 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.75 to $2.00 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand active. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand good. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $24 to $30 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$67.00	@	—
Sheets	75.00	@	—

* OPA Maximum Price.

Kraft—per cwt.—Carload Quantities Zone A, Delivered			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—

* OPA Manufacturers' Prices.

Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—

Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—

Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—

Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—			
News	*54.00	@	—
Chip	*54.00	@	—
Sgl. Mla. Ll. Chip	*65.00	@	—
White Pat. Coated	*79.00	@	—
Kraft Liners 50 lb.	*74.00	"	—
Binders Boards	84.00	"	116.00

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

	Bonds	Ledgers
100% Rag Ext. No. 1	$39.10@$46.00	$40.25@$47.25
100% Rag	32.20 " 37.75	33.35 " 39.25
85% Rag	.... "	29.90 " 35.00
75% Rag	23.00 " 27.00	24.15 " 28.25
65% Rag	.... "	22.80 " 27.75
50% Rag	18.70 " 22.75	19.90 " 24.25
25% Rag	16.40 " 20.00	17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items
Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55@$12.75	$11.70@$14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper
Delivered in Zone 1:

No. 1 Glossy Coated	$13.65@	$15.50
No. 2 Glossy Coated	12.40 "	14.00
No. 3 Glossy Coated	11.60 "	13.25
No. 4 Glossy Coated	11.15 "	12.75
No. 1 Antique (watermarked)	10.25 "	11.75
No. 2 Offset	9.60 "	11.00
A Grade E. F.	9.35 "	10.75
A Grade S. & S. C.	9.60 "	11.00
B Grade E. F.	8.85 "	10.25
B Grade S. C.	9.10 "	10.50
C Grade E. F.	8.55 "	9.75
C Grade S. C.	8.80 "	10.00
D Grade E. F.	8.25 "	9.50
D Grade S. & S. C.	8.50 "	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers' Prices, Less Freight. Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$94.00
Unbl. Softwood Sulphite	82.00
Bl. Hardwood Sulphite	91.50
Unbl. Hardwood Sulphite	79.50
Bl. Glassine Sulphite	97.00
Unbl. Glassine Sulphite	86.00
N. Bleached Sulphate	94.00
S. Bleached Sulphate	88.00
N. Semi-Bleached Sulphate	89.00
S. Semi-Bleached Sulphate	83.00
N. Unbl. Sulphate	76.00
S. Unbl. Sulphate	69.50
Bl. Soda	84.00
Unbl. Soda	80.00
Groundwood	58.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$12.50
Lake Central	12.50
Southern	15.00
West Coast (in area)	9.50
West Coast (out area)	15.50

	50%-80% Air Dry Weight
Northeast	$10.50
Lake Central	10.50
Southern	13.00
West Coast (in area)	8.50
West Coast (out area)	14.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$7.50
Lake Central	7.50
Southern	10.00
West Coast (in area)	6.50
West Coast (out area)	12.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

* OPA Maximum Prices.

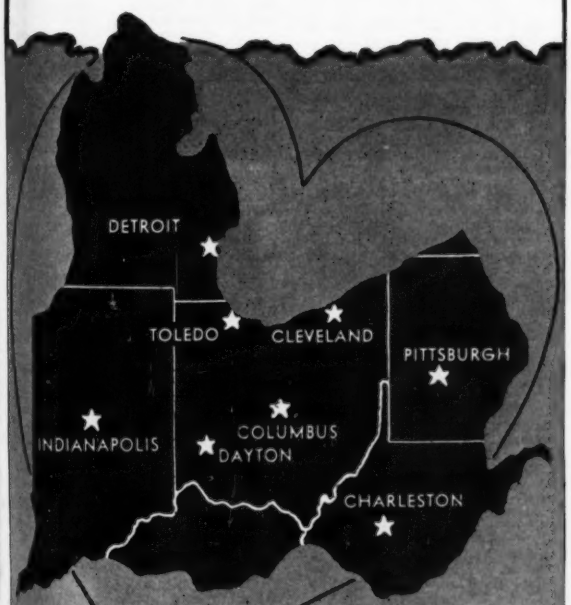
Sell your Paper through the Paper Merchants and

CONVERTERS

THE CENTRAL OHIO PAPER COMPANY

COLUMBUS · DETROIT · CLEVELAND · PITTSBURGH
DAYTON · INDIANAPOLIS · TOLEDO · CHARLESTON

. . . in the Very Heart of Industrial America



We convert large quantities of envelopes and school supplies; coat or impregnate paper, cellulose film, foil, acetate, cloth and similar materials. We have served this rich industrial area for 70 years.

THE CENTRAL OHIO PAPER COMPANY
226 NORTH FIFTH STREET · COLUMBUS 16, OHIO
Detroit Cleveland Pittsburgh Dayton
Indianapolis Toledo Charleston

New Life With Butterworth Refills

Here's how you can give new life to calender stacks . . . assure maximum production and many extra hours of service. Let our skilled craftsmen refill your present calender rolls by the special Butterworth process. In many mills, a single Butterworth Refill placed in the stack with other rolls has led these mills to standardize on Butterworth Calender Rolls. Remember, the finish on the paper can only be as good as the rolls in the calender.

Every Butterworth Roll is made to specification and tested to meet Butterworth's standards for hardness, smoothness and density before delivery. Let us serve you.

For full information, write or call H. W. Butterworth & Sons Company, Philadelphia 25, Pa. — Textile Finishing Machinery Company Division, Providence, R. I. : : Charlotte, N. C., 1211 Johnston Bldg. : : In Canada — W. J. Westaway Co., Hamilton, Ont.

Butterworth CALENDER ROLLS

Old Rags

White, No. 1—			
Repacked	*3.80	@	—
Miscellaneous	*3.20	"	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Thirds and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.30	"	—
Roofing Rags—			
No. 1	*1.55	"	—
No. 2	*1.45	"	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

* OPA Maximum Prices.

Foreign Rags

Pre-War Quotations

All Prices Nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.06	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.30
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.25	@	3.30
Wool Tares, light	3.25	"	3.50
Wool Tares, heavy	3.50	"	3.75
Bright Bagging	3.25	"	3.50
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	1.50	"	—

* OPA Maximum Prices.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.73½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17¼	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—

(Hard Fiber)

Medium Java	.18	"	—
Mex. Sisal	.16	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable Shredding	.01¾
Fancy Percales	.04¼
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—			
(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	@	3.50
No. 1 Clean Bright—			
Sisal Strings	.04	"	—
No. 2 Clean Bright—			
Sisal Strings	.03	"	—
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.80
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila.)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.75	@	2.90
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*	"	4.00
Mixed Rope	1.60	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
South America	—	"	3.25

BOSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.75	@	2.90
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*	"	4.00
Mixed Rope	1.60	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
South America	—	"	3.25
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25	"	—
Aust. Wool Pouches	—	"	3.65
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

* OPA Maximum Prices.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.04½	@	.04¾
Fancy Percales	.04¼	"	.05
New White No. 1	.06¾	"	.07
New Light Flannelettes	.05½	"	.06
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03¼
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached Blue Cheviots	.06½	"	.06¾
Fancy	.05½	"	.06
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	—
O. D. Khaki	.02¾	"	.03
Corduroy	.03¼	"	.03¾
New Canvas	.03¼	"	.03¾
B. V. D. Cuttings	.06¼	"	.06½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—*
Miscellaneous	3.20	"	—*
White No. 2—			
Miscellaneous	2.65	"	—*
Twos and Blues, Repacked	2.20	"	—*
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—*
Miscellaneous	1.80	"	—*
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—*
No. 2	1.45	"	—*
No. 3	1.35	"	—*
No. 4	1.35	"	—*
No. 5, Quality A	1.85	"	—*
Quality B	1.20	"	—*
Quality C	.95	"	—*
Old Manila Rope	5.75	"	—*

* OPA Maximum Prices.

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

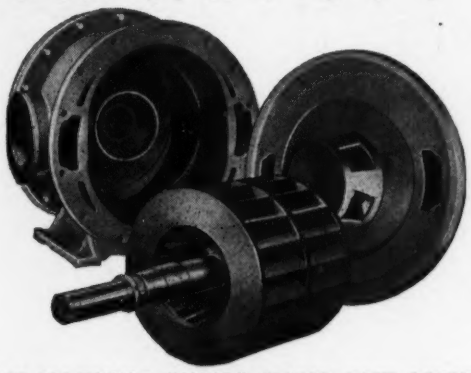
Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.55	"	—
No. 1 Roofing Bags	1.45	"	—

SIMPLICITY



NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

CLINTON

STARCHES
Special Grades for Beater, Calender and Tub Sizing

•

Offering a Personalized Service to Industry Since 1906

CLINTON INDUSTRIES, INC.
Clinton, Iowa
QUALITY • UNIFORMITY • SERVICE

Stickle
STEAM SPECIALTIES COMPANY
2245 VALLEY AVENUE • INDIANAPOLIS, INDIANA

For More than 40 Years Reducing the Cost of Steam in Paper Mills.

Since 1901

Dietz
DIETZWORKS PHILA PA
MACHINE WORKS
MANUFACTURERS

TOILET ROLL CONVERTING MACHINES
TOWEL ROLL CONVERTERS
SPECIAL MACHINERY
ANILINE PRINTERS
TOWEL INTERFOLDING MACHINES
ROTARY CARD CUTTERS
SLITTERS FOR VULCANIZED FIBRE
126 W. Fontaine St.
PHILADELPHIA 22, PA.

INTERNATIONAL WIRE WORKS
Fourdrinier Wires
MENASHA, WISCONSIN

THE MAYER MACHINE COMPANY, INC.
Manufacturers of
Paper Coating Machines
1155 Scottsville Road, Rochester 11, N. Y.
Waxing & Oiling, Carbon, Laboratory, Flat Beam Converting and Measuring and Roadmarking.

The Kohler System provides
CONTINUOUS UNWINDING AND REWINDING
of paper and other web materials by changing rolls at both ends of the process at full speed.
THE KOHLER SYSTEM COMPANY
159 E. CHICAGO AVENUE CHICAGO 11, ILL.

Appleton Felts
MAKE GOOD PAPER
APPLETON WOOLEN MILLS
APPLETON, WISCONSIN

Appleton Wires are Good wires
APPLETON WIRE WORKS, INC. APPLETON, WIS.

Paper and Paper Stock Imports At New York and Other Ports

NEW YORK IMPORTS

WEEK ENDING MAY 25, 1946

SUMMARY

Newsprint .....15,737 rolls
Wall Paper ..... 16 cs.
Writing Paper ..... 2 cs.
Decalcomania Paper .....62 cs.
Tissue Paper .....31 cs.
Tracing Cloth .....16 cs.

NEWSPRINT

N. Y. Journal American, Markland, Liverpool, N. S., 970 rolls.
N. Y. Tribune, Inc., Markland, Liverpool, N. S., 1477 rolls.
N. Y. World Telegram, Markland, Liverpool, N. S., 664 rolls.
Brooklyn Eagle, Markland, Liverpool, N. S., 617 rolls.
Herald Statesman, Inc., Markland, Liverpool, N. S., 72 rolls.
Washington Post, Markland, Liverpool, N. S., 1742 rolls.
Alexandria Gazette, Markland, Liverpool, N. S., 24 rolls.
International Paper Co., International No. 1, Gatineau, Que., 310 rolls.
H. G. Craig & Co., Donpaco, Donnacona, Que., 361 rolls.
H. G. Craig & Co., Kermic, Donnacona, 360 rolls.
H. G. Craig & Co., A.C.D., Donnacona, 472 rolls.
H. G. Craig & Co., Newscarrier, Donnacona, 358 rolls.
H. G. Craig & Co., G.T.D., Donnacona, 438 rolls.
News Syndicate Co., Highland Park, Baie Comeau, 7872 rolls.

WALL PAPER

A. L. Diament & Co., Oregon, Havre, 5 cs.
Judson Sheldon Corp., Oregon, Havre, 9 cs.
Hudson Shipping Co., Empire Flag, Liverpool, 2 cs.

WRITING PAPER

D. F. Young & Co., Empire Flag, Liverpool, 2 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Empire Flag, Liverpool, 62 cs. (Simplex & Duplex).

TISSUE PAPER

Meadows Wye & Co., Empire Flag, Liverpool, 31 cs. (Gauze carbonizing).

TRACING CLOTH

E. Dietzgen & Co., Empire Flag, Liverpool, 16 cs. (Bleached).

RAGS, BAGGINGS, ETC.

Continental Bank Trust Co., Empire Flag, Liverpool, 69 bls. mixed jute bagging.
(———), Empire Flag, Liverpool, 37 bls. new wool rags; 9 bls. threadwaste.
Swiss Banking Corp., Link Splice, Vera Cruz, 109 bls. rags.
E. Butterworth & Co., Inc., Cape Isabel, Liverpool, 90 bls. cotton waste; 65 bags old pickers; 110 bags dry hidecuttings.
S. Godfrey, Cape Isabel, Liverpool, 9 bls. worsted threadwaste.
E. J. Keller Co., Inc., Cape Isabel, Liverpool, 77 bls. old cotton rags.
Continental Bank Trust Co., Bartlesville Victory, Antwerp, 37 bls. rags.
E. J. Keller Co., Inc., Bartlesville Victory, Antwerp, 222 bls. rags.
Englander Co., Rio Neuquen, Buenos Aires, 414 bls. cotton linters.
Simmons Co., Rio Neuquen, Buenos Aires, 2329 bls. cotton liters.
New England Waste Co., Elko Victory, Santos, 408 bls. cotton waste.

BONE GLUE

Wessel Duval & Co., Inc., Elko Victory, Santos, 600 bags.
Transatlantic Animal By-Products Inc., Elko Victory, Santos, 400 bags (sheet).

CASEIN

Castanea Paper Co., Elko Victory, Buenos Aires, 4000 bags (lactic) 200,000 kilos.

WOODPULP

Parsons & Whittemore, Inc., Highland Park, Baie Comeau, 968 bls. ground wood.

Quaker Paper & Cordage Group Sets Up Summer Golf Dates

PHILADELPHIA — George W. Hoffner, chairman of the Philadelphia Paper & Cordage Association's golf committee, has arranged an attractive golf schedule for 1946. Included in this schedule are the following outings: Wednesday, June 26th—Lu Lu Temple Country Club, with trophies from Fort Howard Paper Co. and Schuylkill Paper Co.; Tuesday, July 16th, Tavistock Country Club, with the W. C. Hamilton & Son trophy featured; Tuesday, August 20th, Old York Road Country Club, featuring the Morgan H. Thomas trophy; Tuesday, September 17th, Merion Golf Club (East Course), with Beveridge Paper Co.'s trophy, and Tuesday, October 8th, Pine Valley Golf Club with the Jessup & Moore Paper Co. and Buffalo Envelope Co. trophies to be played for. Mr. Hoffner requests that all reservations be made promptly for those who wish to participate so that provision can be made for caddies and luncheon.

Waste Dealers Group Expands Its Foreign Membership

The National Association of Waste Material Dealers, Inc., Times Building, New York, finds increased interest all over the world in trade possibilities with the United States covering waste materials that have either been imported into the United States or exported to foreign countries up until the start of the recent war. Previous to the years of the depression, the organization had built up a foreign membership which covered practically every country of importance in the world with the exception of South America. The Association is now building that membership back.

Many inquiries have been received and numerous applications have reached the Association's offices from many of the countries of Europe and the Far East which indicates that as restrictions are removed and money conditions become easier, foreign concerns are anticipating expanding their operations in this country and are realizing that one of the first steps to such expansion is an affiliation with N.A.W.M.D.

New applications for membership from the United States have also been phenomenally large. Previous to the Convention in March, a directors' meeting was called to act on 49 new applications for membership and action is soon to be taken on an additional 50 applications that have been received since the convention dates.

Swedish Pulp Imports Run 87 Per Cent of Total

WASHINGTON—Imports of wood pulp into the United States from overseas totaled 224 short tons during the week ended May 16, 1946, the Forest Products Section, Office of Domestic Commerce, Department of Commerce, reported today. The aggregate quantity of wood pulp imported from overseas sources from January 4 through May 16 amounts to 203,737 short tons.

Tonnage of the year, so far, was composed of about 34 percent unbleached sulphite wood pulp, about 53 percent unbleached sulphate wood pulp (kraft), and about 5 percent of bleached sulphite grades other than high alpha and dissolving. The remaining 8 percent was mechanical pulp, bleached sulphate, and special chemical grades of bleached sulphite.

Imports of wood pulp from Sweden totaled 177,791 tons as against 25,946 tons from Finland. Of total overseas imports, 87 percent came from Sweden and 13 percent from Finland.

Lawrence Lefebvre

HOLYOKE, Mass., May 27—Lawrence Lefebvre, 70, died recently in his home, 422 Maple St., after a short illness. A papermaker by trade, he had been employed for a number of years by the Whiting Paper company. Lefebvre, a resident of Holyoke for 54 years, came here from Canada, where he was born.